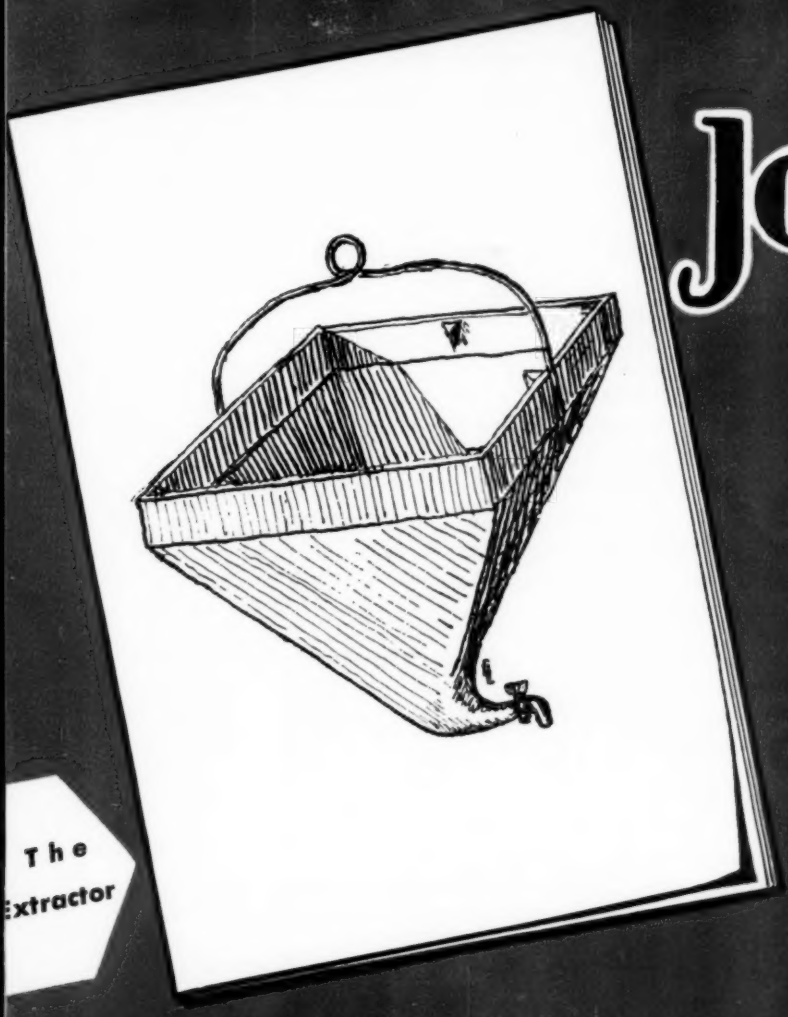
AMERICAN Bee Journal



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1926—1960

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13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	Last Q. 28th	F.Q. 27th

1960 **APRIL** 1960

SUN	MON	TUE	WED	THU	FRI	SAT
	F.M. 4th	F.Q. 11th	Last Q. 19th	F.M. 26th	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

1960 **MAY** 1960

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
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AMERICAN BEE JOURNAL Hamilton, Illinois

INVENTION OF THE HONEY EXTRACTOR

From the "HISTORY OF AMERICAN BEEKEEPING"

by FRANK C. PELLETT

The invention of the honey extractor was an event of major importance in the development of the beekeeping industry. As is so often the case, it was the result of an accidental observation. It was in 1865 that Major Hruschka, an Austrian of Vienna who later moved to Dolo, near Venice in Italy, gave his small son a piece of comb honey on a plate. Placing the honey in a basket, the boy swung the basket around his head as children commonly do when carrying any kind of object. When Hruschka saw that the honey was thrown from the comb by the motion, the idea of the extractor was born. Such is the story commonly told, although historians question the facts. They say the extractor was born of long search for a way to remove the honey.

Once the power of centrifugal motion was recognized, it came into use among the beemen of the civilized world very rapidly. Langstroth, among other Americans, at once recognized its value and soon had made a machine for his own use. He, apparently, first learned of the discovery through German sources, since his announcement in the *American Bee Journal* in April, 1868, tells of "a plan devised in Germany for emptying the honey from the comb, without injuring the comb." He gave a picture of his machine and an enthusiastic report of the success of the new equipment.

Later, in his personal reminiscences published in *Gleanings* in 1893, Langstroth mentions the extractor with the regret that he had been unable to grasp the possibility when he had observed the water flying from a grindstone, or mud from a carriage wheel. He was actually making use of the principle by emptying the contents of the combs, by filling the combs with water to get rid of partly grown drone larvae and then with a swift motion of the outstretched hands flinging out the water and the larvae. He expressed the opinion that the honey emptying machine should never have been called by any other name than a Hruschka, in honor of the man who first made it.

Once the American beekeepers learned of the principle involved in the extractor, there were a great many applications of it. Since no manufactured machine was available in the market, every man built one according to his own ideas, and each made some changes in the model to meet his peculiar conditions.

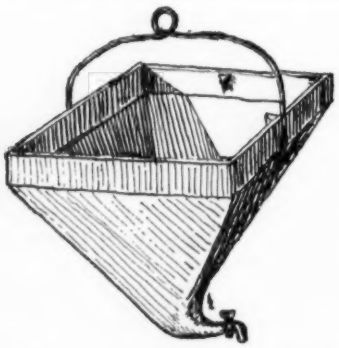
For a time there was much seeking for a name which would carry the correct impression of the new machine. Honey emptying machine was the first term employed, but that was cumbersome and unsatifactory. Some called it "Honey Slinger," which was not much better. It was not long until the term "extractor" came into use.

Charles Dadant's account of his first extractor is typical of the efforts of the beekeepers to take advantage of the new invention. He had the local tinner make the big can, while the blacksmith forged the iron frame to support the baskets. The baskets were made of fly screen, which soon had to be reinforced to keep the combs from breaking through. A butcher knife was used to uncap the combs. Many combs were broken but the honey was thrown out and much enthusiasm resulted.

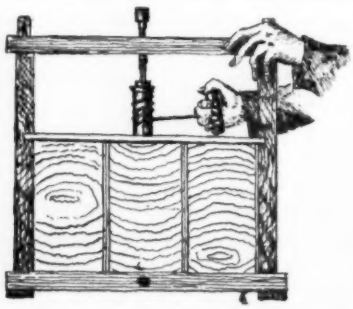
Moses Quinby took an old fanning mill used for cleaning grain and used the parts to make his first extractor. The fans were removed and wire cloth stretched around the four sides. A box set in the frame was made to revolve by means of the gearing which had moved the fanning mill. It is said that Quinby was enthusiastic beyond words when he saw the honey thrown from the combs by the new device. This crude beginning did not satisfy him for long, and he built another in more workable form. Root's *ABC of Bee Culture* is authority for the statement that it was the Quinby pattern which served A. I. Root for the beginning of his experiments which, after much improvement, was placed on the market under the name of "Novice's Extractor."

In the second issue of *Gleanings*, Root gave directions for making an extractor at a cost not exceeding five dollars. This was described in great detail to enable any handy workman to construct it. For gearing, an apple parer was used with parts not needed removed. A little later he offered the inside work of an extractor for two dollars and when gearing was also wanted, at $3.50, made to fit either a seventeen- or twenty-inch can.

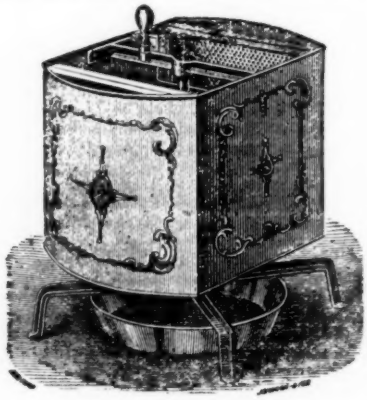
It is not surprising that hundreds of devices making use of the centrifugal motion were made for the purpose of throwing out the honey. Root commented editorially on Draper's dollar extractor, which was a



The first extractor. Hruschka's smelatore, swung at end of a rope.



Above, one of first improvements; a rope-pulled slinger. At right, in the Peabody extractor the can and contents rotated on a pivot.



metal case much like a dripping pan with a sheet of wire cloth, framed in tin, laid over the top. The comb was laid on this and the whole apparatus whirled around the head by means of four cords fastened at the corners. Crude as it was, it was said to work.

In the *American Bee Journal* for January, 1870, was described the Peabody extractor, invented by H. O. Peabody of Boston. This invention was patented in 1869 and appears to have been the first extractor manufactured for sale. All machines previously described were accompanied by detailed descriptions to enable those interested to make them, but this announcement advised those interested to send for circulars. The Peabody extractor differed from others in that the can with contents rotated on a pivot instead of having baskets to revolve inside the can. The description as first published follows:

The machine consists of a tin case, in shape somewhat resembling a common wash boiler, adapted to receive frames of any size, across either end, and is made to revolve upon a central stationary spindle, set in a cast iron base.

The bottom of the can is made sloping toward the center, and has a metal casting of peculiar form soldered into the center of the same, through the center of which passes the spindle on which the case revolves, and in which are also formed outlet passages, through which the honey is discharged.

While this machine remained on the market for some years, it appears never to have had a large sale.

Soon machines began to appear under the name of numerous men who had some minor difference to offer. There were "Gray's Honey Slinger," a Muth extractor, and a dozen others, all presenting some supposed advantage but really differing but little from each other.

Herrod-Hempsall in his *Beekeeping New and Old* states that the first practical cylindrical extractors, called "Honey Slingers," to be sold in England were manufactured by R. R. Murphy, of Fulton, Illinois, and cost delivered in England a total of eight pounds sterling. Because of the high price, only three were sold in England. This was about 1873, the year when T. W. Cowan began his experiments which led to the Cowan extractor. Cowan appears to have originated the reversible basket, which enabled the beekeeper to change sides of the comb to be extracted without lifting them from the machine. This was a very important step forward, and was later adopted by most of the machines in common use.

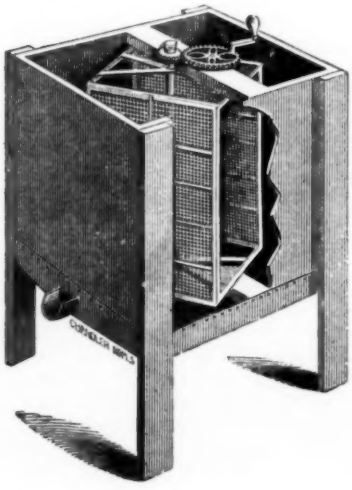
While many individuals offered minor changes in these machines, few men seemed to have made any definite contribution. The first machine built in this country by Langstroth and Samuel Wagner was quite different in design from the Hruschka extractor, although, of course, utilizing the same principle of centrifugal motion. It provided for rotation of the combs within a container by means of a gear driven shaft, and this improvement is retained until now. Quinby appears from the record to have gone a step farther, although just how much he contributed to the machine later known as the "Novice," developed by A. I. Root, is not clear from the record. Root made a very definite improvement in the container by using a can which was taller than wide, and by means of improved driving machinery. To this, the reversible baskets contributed by Cowan were added later. Little further improvement was apparent for many years.

Automatic reversing extractors had a short vogue. Cowan's baskets were hung from hinges fastened at one side and, by swinging first one way and then the other, both sides of the comb were emptied. The next step was to set the baskets on a pivot in the center of the bottom, and to reverse by simply turning the baskets while the machine was in motion.

Who is entitled to prior credit in originating this form of reversing frames, is not entirely clear. In the spring of 1917, the writer visited T. W. Livingstone at Leslie, Georgia, and was much interested in a machine which Livingstone had built for his own use on this plan. It was illustrated in the *American Bee Journal*, December, 1919. Livingstone previously had described it in the same magazine in 1909, and the machine had been in use in his apiaries since that time. Whether or not he was the first, he never received either recognition or reward for the invention.

About 1919 a man named Markle

Square box machine, with top horizontal hand crank.



"Novice's" (Root's) improved metal can with faucet. At right, Gray's Honey Slinger with vertical crank.

demonstrated an extractor which he called the "New Idea" at the annual meeting of the Ontario Beekeepers' Association. This machine was manufactured and offered for sale in 1921 by Ham Brothers, of Brantford, after it had been given two years of tests in the apiaries of Foster and Holterman. In 1922, it was offered in the United States by the name of Lewis-Markle extractor, by the G. B. Lewis Company of Wisconsin. It was built as a power machine only, with eight baskets. A considerable number of them were sold for a few years.

In 1919, the Root Company also built a machine of this type which they called the Buckeye. It was tried in a Michigan apiary that year and again in 1920. A model for trial was first built at Medina in 1918. In 1921, they offered it in the catalog and continued its sale for several years. Others have since appeared.

The perfection of the radial extractor by several individuals at about the same time brought a new kind of power extractor into the market, and definitely retired the Buckeye and the Markle.

Radial extraction appears to have been suggested by several soon after Hruschka discovered that honey could be thrown out by centrifugal motion, but much difficulty appeared in the making of a practical machine. It was mentioned by Hamet in *L'Apiculteur* in 1867. Cowan's first extractor, which was exhibited at the Crystal Palace in 1874, appears to have been built on this principle, as will be seen from the following description by the editor, C. N. Abbot, in the October 1 issue of the *British Bee Journal:*

Instead of the combs of honey standing at right angles with the radii of the circle as with others and forming two sides of a square within the circle in which they revolve, and which necessitates the reversal of their positions, as each side of the comb is operated upon, they stand perpendicular as radii from the center of the machine in the same plane with its spindle; and the argument appears to be, that inasmuch as the cells point slightly upwards toward the top bar of the frame of comb, if the frame is placed on end with its top bar outermost, the cells will have their inclination outward, and at the angle which most facilitates the escape of the honey from them.

In the same magazine (August 16, 1888), Mr. Cowan tells of his success with this first outfit, but explains that it was safe to extract only old combs because of damage to new combs through breakage. He then described a similar machine invented by M. Buhne-Lauben, of Schleisen. When Cowan invented reversible baskets the radial principle was dormant for many a long year.

In 1893, "Rambler" described, in *Gleanings*, the Bohn's honey extractor invented by a German living in California. Bohn placed the combs in a wheel so constructed that fourteen combs could be extracted at once. It was provided with gearing and is described as "so simple and easy that the eleven-year-old boy, Claude Henderson, extracted with it twelve tons of honey during the past season."

About 1922, interest was revived in this method of extraction and experiments looking toward a practical machine were undertaken. In 1924 S. P. Hodgson & Sons, of British Columbia, patented such a machine in Canada and, in the following year, the A. I. Root Company announced their Simplicity machine which held forty-five combs, whereas the Hodgson machine took twenty-eight. Herrod-Hempsall patented a similar machine in England shortly before, and it appears that Hodgson based his machine on that.

Arthur Hodgson, of Jarvis, Ontario, built a machine in 1923 on the general plan of the Bohn extractor which would carry forty-eight combs at one time. Root credits Arthur Hodgson with building the first practical machine which would throw out the honey in a commercial way without reversing the combs, and at the same time reduce the time necessary for the operation. Although it took longer to extract a comb completely, the fact that the machine could accommodate so many more combs at one time made the final result more efficient.

There were other patents both in this country and abroad, but since the machines did not come into common use, they contributed little to the development of the industry.

THE NEW INDUSTRY

Although the change was slow in coming, the invention of the extractor brought a revolution in the beekeeping industry. To extract the honey from the combs and return them to the bees to be filled again, opened great possibilities to the honey producer. During the good honey-flows, supers of drawn combs were filled at a surprising rate and the average yields greatly increased.

The change brought a new product to market. Since, at that day the common method of taking honey was to cut the combs from box hives or crude hollow logs and sell it in bulk, it was anything but attractive in appearance. Too often there was much pollen in the cells and sometimes brood as well. Bits of wood, leaves, and other refuse were likely to be mixed with the honey, due to careless handling. The public had come to expect that kind of product. Liquid honey was known as "strained" honey and was secured by mashing the combs and hanging them in cloth bags until the honey drained away. Sometimes the honey was heated to the point of melting the wax, when the honey was darkened and the flavor changed through too much heat. It was impossible to secure a high grade of liquid honey by such methods.

The extractor changed all this. The cells were uncapped by a sharp knife and the honey thrown out in the machine. It was clean and unheated, and several shades lighter in color than the honey then known to the housewife. The new product was slow to gain public confidence. Instead of meeting popular favor as the beekeeper expected, it aroused suspicion.

The Dadants have told in the old bee magazines of difficulties in disposing of the first extracted honey. About 1870, they had about 300 pounds of liquid honey to sell. C. P. Dadant, then a young man, went to Keokuk with a sample to dispose of it. His sample was too light and clear, and was regarded as sugar syrup. In fact, some of the customers told him that when they wanted sugar syrup they would make it themselves.

Previously Dadants had put up honey in small frames which held about three pounds each and packed them in crates with glass at each end. To dispose of the crop they often went on a river steamboat to St. Louis, and the shipment was often much admired by the crew and passengers.

The trade, long accustomed to the sight of honey in the comb, refused to have anything to do with the liquid product and refused to believe in its purity. In spite of their best efforts, many believed that they were manufacturing the product instead of getting it from the bees as they previously had done. The worst slader was from a local man who thought that he could not eat honey. He stated that honey made him sick, but that he liked the stuff that Dadants made. He said that he did not know what they made it of,

but probably good sugar, and that it was just right for him. In the face of such an attitude, it required much tact and patience to convince the public and dispose of the crop.

The difficulty was greatly increased by the fact that adulteration of the extracted honey sold in the cities became general so quickly. Since suitable containers were not then available, it became a problem to place the product before the buyer in a suitable quantity. At first much of it went to market in wooden pails holding about twenty-five pounds. These were given a coating of wax mixed with a small quantity of lard to prevent leaking. On the 20th of October, 1874, C. P. Dadant took a boat for St. Louis with 112 of these pails and 15 cases of comb honey. Such a quantity of honey from one apiary was rarely seen in those days and it caused something of a sensation.

For many years it took a great deal of personal argument and instruction to convince the buyers that liquid honey was a dependable product, and the difficulties were not greatly reduced until the passage of the pure food laws many years later.

The problem was further complicated by the tendency of extracted honey to granulate. This natural change was not understood and required an endless amount of explanation. Adulterators took advantage of this fact to accuse honest honey of adulteration and to claim purity for their own because it did not granulate, when just the opposite was true.

When the beekeeper began to use the extractor he was astonished to see how fast the honey came in. In his enthusiasm he often extracted honey before it had ripened and fermentation was the result. There were many lessons to be learned before he was able to make proper use of his new tool. A. I. Root even went so far as to propose to empty his cistern in which to store his honey. Much honey was stored in barrels and after it was fully granulated, it offered something of a problem to get it back to the liquid state. It was common practice to remove the head of the barrel and to dig out the honey with a bright new spade. For many years barrels were the common containers for large quantities of honey.

After the sixty-pound can came into common use, it provided a satisfactory means of handling the product. Tightly sealed, it could be kept for a long period free from dust and dirt, and could be restored to liquid form by heating before removing from the container.

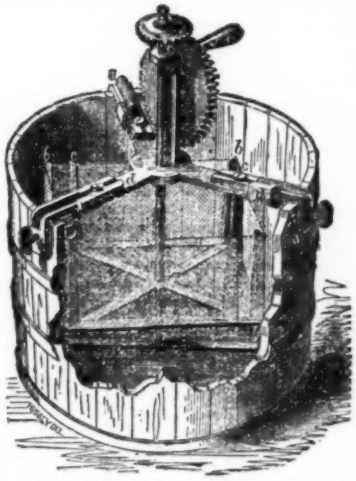
The extractor largely has been responsible for the great expansion of the industry, whereby outyards and large scale production have resulted.

Honey-Emptying Machine

From April, 1868

by L. L. Langstroth and Son

We, last year, made the following announcement in our circulars: "A plan has been devised in Germany for emptying honey from the comb, without injuring the comb, or removing the beebread or any other impurities. By returning the emptied comb to the bees, the yield of honey, in favorable seasons, may be largely increased. An improvement on the German machine for effecting this object, has been devised and patented by L. L. Langstroth and Samuel Wagner, which will soon be thoroughly tested, so that the machine can be offered for sale the coming season."



Langstroth's extractor was the first made in this country.

Owing to constant demands on our time in other directions, the first machine was not ready for use, until the middle of June. We had sent to purchasers about the first of May, a large number of queens reared the previous season, and as the yield of honey from the fruit trees and the locust blossoms had been very abundant, the combs, in many of the hives, were so filled with honey that the young queens had very few cells in which to deposit their eggs. In this state of affairs the machine was at once called into play; four and even six, of the heaviest combs were taken out, the uncapped cells emptied, and the combs returned.

During the course of this work, we found that sealed brood in the combs was uninjured by the process of emptying, that the eggs in the cells were undisturbed, and that pollen, freshly deposited, remained in place; but that all the honey uncapped, and all the young larvae in the cells uncapped, made haste to quit the comb when once the machine commenced to work.

An apiarian friend, whose articles have often added interest to the columns of the Journal, being soon after on a visit to our apiary, saw the machine and devised a plan for making it lighter, simpler, and cheaper, and at the same time equally adapted to most of the ends sought to be attained. Our original machine, of which a cut is annexed, which will serve to give an idea of the principle on which we work, (viz: centrifugal force), had two ends in view: one to allow of the reception of comb frames of different sizes, the other, to allow of the use of different sized barrels or receptacles. To accomplish these ends, it has been made of iron, with numerous bolts, pillars, screws, etc. In the modified machine the patented features are dispensed with, a barrel being furnished with each apparatus, and the comb-holder of wood, being made large enough to hold the Langstroth frames used in hives not over ten inches deep. Smaller frames, or pieces of broken comb, can as readily be emptied.

This modified style we have thoroughly tested, and found to work to our satisfaction. With it, two full combs, in our frames, can be emptied dry and clean, in less than three minutes after the cells are uncapped. This uncapping was at first a very difficult process, until we had a knife made expressly for the work; this knife needs to be frequently dipped in boiling water, to prevent clogging of the edge.

After a little practice nearly every cell can be readily uncapped by this knife, without materially injuring the comb, which can at once be returned to the bees.

Having already made this communication longer than was intended, we will only add that since the first

day of December, we have emptied successfully all our full combs secured as surplus, and that the honey obtained from these combs, many of them black from long breeding, and more or less stored with beebread, was of good color, and possessed the peculiar, delicate flavor which would have been destroyed if the comb had been subjected to either heat or pressure. We found no difficulty in selling this honey at wholesale, put up in "glass screw-top fruit cans," side by side with the finest box honey, for only a few cents less per pound. For table use, in all except the mere show made by white comb, it is far preferable to honey in the comb.

Out Of The Past– For Future's Gain

by William G. Eaton

INTRODUCTION

Several Kentucky leaders carved an enduring name for themselves in the Beekeepers' Hall of Fame during the formative years of beekeeping, simply because their inventive genius and a quest for knowledge and progress led them to keep in step with the demands which the "new way" had suddenly placed upon them. In fact, they very often led the way during this age when beekeeping was emerging from the fads and superstitions with which it had been surrounded for centuries.

Highlights from an original summary of the work which these early, famous Kentucky beekeepers accomplished during the era, including various beekeeping facts of historical interest in the Blue Grass state, will be used as a source of material for short, practical, accounts of events which should serve readers as a guide-post, rather than a hitching-post. These accounts will be included in the proper issue throughout the AMERICAN BEE JOURNAL'S Anniversary Year.

PART I The Extractor

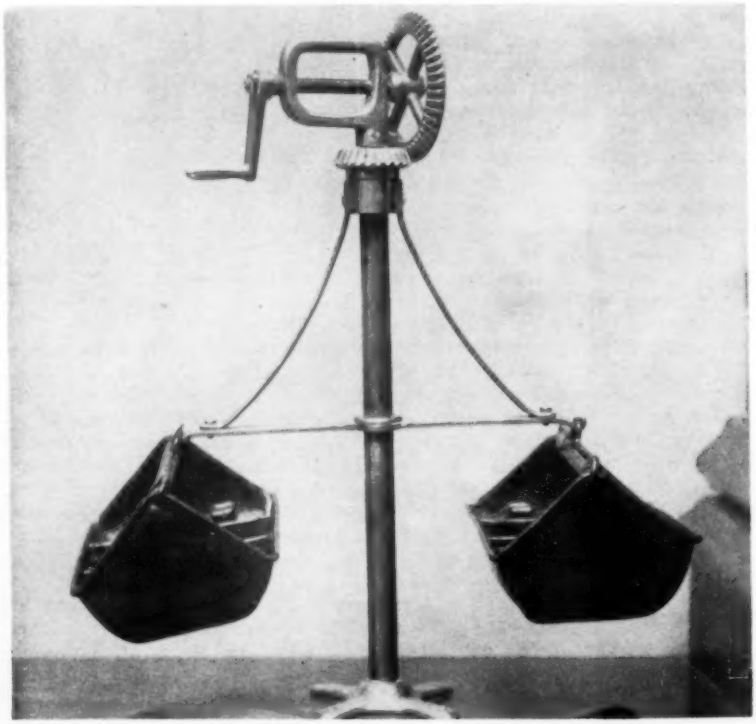
As a background for our thinking, please bear in mind that the practical value of centrifugal force had just been recognized by von Hruschka, and that beekeepers throughout the world were quick to grasp its significance, and to apply these natural laws by making extractors to meet their own peculiar conditions.

Rev. Langstroth, always on the alert, apparently learned of the discovery shortly after the Austrian Major announced it in the German magazines in 1865, for he was the first to build an extractor in America. Langstroth described his newly-found knowledge to American beekeepers through the AMERICAN BEE JOURNAL in 1868.

From the existing records, it appears that General D. L. Adair, author, naturalist and inventor of Hawesville, Kentucky, was one of the first, if not the very first, to offer an extractor for sale. However, H. O. Peabody of Boston is generally credited with this achievement. The Peabody machine was patented in 1869, although it was not described to the public until 1870. General Adair advertised a complete line of beekeepers' supplies, including his "Melipult," during the years 1869-1872. Details of his extractor and other equipment are found in several beekeeping publications of which he was the author. The Adair development, weighing twenty-eight pounds and selling for $14.00, had a patent pending, and is described as follows:

"This machine consists of a central spindle, set in a base that is screwed fast to the floor or a wide board. The gearing is placed on the top of this spindle, and by turning the crank,

General D. A. Adair, author, naturalist and inventor, of Hawkesville, Ky., one of the first to offer supplies to beekeepers, including an extractor.



Adair's "Meliput" weighed 28 pounds, sold for $14. He claimed it would empty the honey with half the motion needed for any other since the cells of the comb were always in the line of the motion.

the suspended arms are made to revolve around the spindle as rapidly as is necessary. On a hook on the end of each arm is hung a peculiarly shaped bucket of tin, over which is laid a frame of wire cloth. The honeycomb is laid on the wire cloth. When the machine is put in motion, the buckets are thrown out and change from a horizontal to a vertical position and the honey is discharged into the buckets. The buckets are easily detached from the machine to be emptied of the honey."

General Adair gives a very interesting discussion in his "Progressive Bee Culture" concerning his views on the newly "discovered" forces that were involved in the development of the extractor, as well as describing at length how they were applied in his own machine. At this point, nothing is said, however, concerning the uncapping of the combs. I consider the following remarks to be of value for special consideration, especially for those readers who are mechanically inclined and are interested in this particular field. He says:

1. "All of the honey extractors heretofore constructed, place the comb in a vertical position, with the walls of the cells horizontal, and only use the centrifugal force in expelling the honey. My machine brings to bear two forces, viz: gravity and centrifugal force."

2. "But in my extractor the cells are always in the line of resultant motion, and at that point are *suddently* and *completely* emptied."

It is my personal opinion that General Adair's machine was just one step removed from Major Hruschka's original discovery. That is, Adair was quick to improve upon the "honey slinger," and that he was possibly doing mechanically what von Hruschka had done manually.

In addition to the "Melipult," Gen. Adair developed a queen and drone trap, a triangular queen cage, and a division-board type feeder. He also reared and sold queen bees, shipped bees by the pound on established combs in a nucleus hive, and received a patent for his section honey boxes in 1869.

In closing, just this bit of additional, interesting material concerning his experiments in horticulture and a resulting graft which he made. It was the graft of a Japanese plum to a peach tree. According to relatives, the resulting fruit was something wonderfully good, having the plum skin and the meat of the peach.

BIOGRAPHICAL - 1888

Major Francesco de Hruschka

The Major Francesco de Hruschka died in Venice, May 11, 1888, aged about 75 years, leaving a beloved wife and several sons. Nothing is publicly known, so far, of his birth and younger years, the major having been very reluctant to speak of himself.

From information published by an Italian bee-journal, *L' Apicoltore* (August, 1878), it appears that he served in the army, and, later, in the navy, of the Austrian Empire, the Italian province of Venetia, in which he lived, being then under the dominion of the Emperor of Austria.

He had attained the rank of major when he relinquished the service to enjoy the happiness of living with his family in his home at Dolo, near Venice, where he kept a large number of colonies of bees, rearing Italian queens for Germany, and manufacturing hives and other bee-keepers' appliances.

His increasing business compelled him to remove to Venice, where he resided for part of the time. The city of Venice is built on 70 or 80 very small islands, which connect with one another by more than 300 bridges. Instead of streets, Venice has mostly canals, traversed by gondolas, which are used as conveyances from house to house, instead of street-cars or carriages. The city is separated from the *terra firma* by a lagoon of shallow water, from two to four miles wide, on which the gondolas may be seen day and night. Such position makes Venice the most wonderful city for the tourist to visit, but, for the same reason, the worst city in which to keep bees, that can be imagined. Hruschka owned a palace, in the city in which he dwelled, though boarding at the hotel, to follow his trade, while his bees were at Dolo.

From what he narrated, on his invention, to the Italian bee-keepers, it appears that, in 1865, a small piece of comb in a dish having been put in a basket fixed to a rope, and whirled around like a toy, by his little son, a few drops of honey were slung out of some of the cells. These few drops were, for his observing mind, the germ of the large step in bee-culture which resulted from his invention. The application of this idea underwent several changes and experiments.

The first machine made by Hruschka was a square tin box, the bottom of which, covered with wire cloth, was funnel-shaped; a glass was

Major Francesco de Hruschka

fastened under it to receive the running honey.

The glass was soon discarded, and replaced by a stopper. The box was suspended by a rope, and turned like a sling. But as the work of extracting was very slow with such a primitive machine, Hruschka invented a large, triangular frame, at the center of which a vertical spindle, turning on a pivot, supported a horizontal beam 12 feet long, at both ends of which the boxes were suspended. Two ropes, one rolling round while the other unrolled, moved the slinging-boxes, which, dropping vertically as soon as the motion stopped, prevented the honey from running out. The length of the beam helped the extracting by increasing the speed of the motion. But this big machine proving too cumbersome, Hruschka invented another extractor, with a crank and two different-sized wheels, joined by a string. Nearly all the machines now in use are only modifications, or, rather, improvements, of this.

Reduced models of these first three extractors were exhibited at the Exposition of Insects, held in Paris, in 1868, entered under the name of Angelo Lessame, of Dolo, Venetia. It is very probable that the Major de Hruschka, in borrowing this name, was prompted by his modesty. It is useless to add, that the grateful remembrance of Hruschka will last as long as his invention will be used by bee-keepers—I mean, forever.

Chas. Dadant.

Hamilton, Ill.

FUTURE DEVELOPMENTS IN HONEY HANDLING

It is not too difficult to visualize from what is now happening what the probable development of the extracting plant of the future will be. Even among the smaller beekeepers from 100 colonies up to the large boys with thousands, the basic changes are more or less the same. Among the larger operators they are already partly materialized.

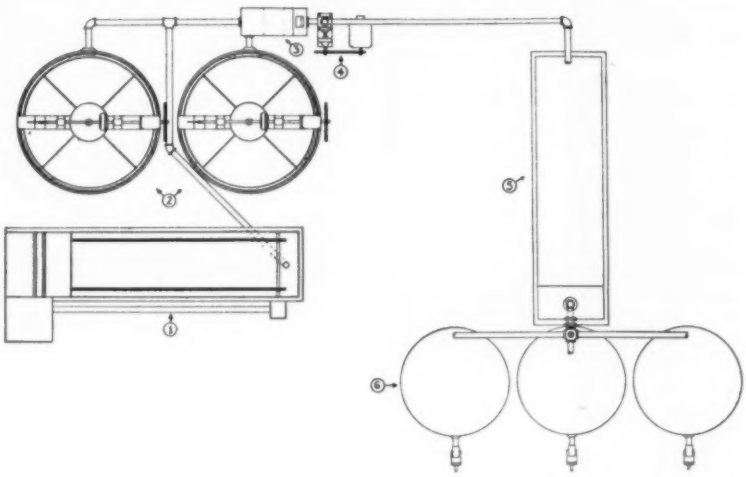
The trend is towards compact, relatively inexpensive honey handling which involves smaller space, adequate machinery and rapid operation. It is perhaps correct to say that the amount of space necessary for a good job will in time become less and less as machinery and equipment develop.

The present large scale setup demands extractors that handle combs of honey in large amounts and it may be in the future that supers of honey rather than combs will run through improved extractors and that even the uncapping will be done with the combs remaining in the supers, uncapping being accomplished by a multiple bladed uncapper rather than by uncapping single combs, one by one, with our present equipment. Extractors of this sort have already been used to a limited extent.

In handling honey, even in smaller outfits, it is likely, as it now is in larger operations, that supers will be moved on pallets or loaders from ground to truck and from the truck into the honey house; that the supers will be lifted automatically to uncapping level. This plan is now used by some operators in commercial operation even those with a relatively small number of colonies.

The cappings will probably be handled as an integral part of the movement of combs either through or from the uncapping machine to the loading end of the setup line where supers may be automatically inserted into the extractor and removed when the extracting is complete in a similar belt-line manner.

Honey from the extractor will probably flow as it now so often does through a heating sump and flash filter through a fine mesh strainer and into temporary storage tanks. From these tanks it may go directly into large, reusable containers or into floor-level tanks from which it will be pumped into tank-style trucks to be delivered to a cooperative packing and blending plant or to a large quantity buyer. (This is now done in at least one case we know about).



A present day commercial honey handling outfit with radial extractors, mechanical uncapper, pumps, filters and settling tanks. Probably the forerunner of the nearly completely automatic outfit of the future.

One type of improved extractor with automatic reels (Superior).

So the trend is for rapid handling with considerably less cost in operation. At present the capital expenditure for machinery, building and equipment is away above the reach of the small operator who now gets along with the equipment we are now using.

However, in order to open up a market for a compact honey handling plant, it will be necessary for the manufacturer to scale down everything to unit levels according to the number of colonies involved and according to the number of buyers in the market to be served.

The basic development will be along the line of rapid, efficient handling all the way from the beehive to the market container with machinery suited to the beekeeper at any level. An operating plant of this type will demand a minimum of space; a plant that can be assembled from directions right in the packing case. This will get rid of the present multiplicity of independent parts which are put together according to the notion of the beekeeper. One of the most frequent inquiries comes from those who have no idea how to establish an efficient honey handling plant to suit their circumstances. It seems quite certain that future developments will solve this problem.

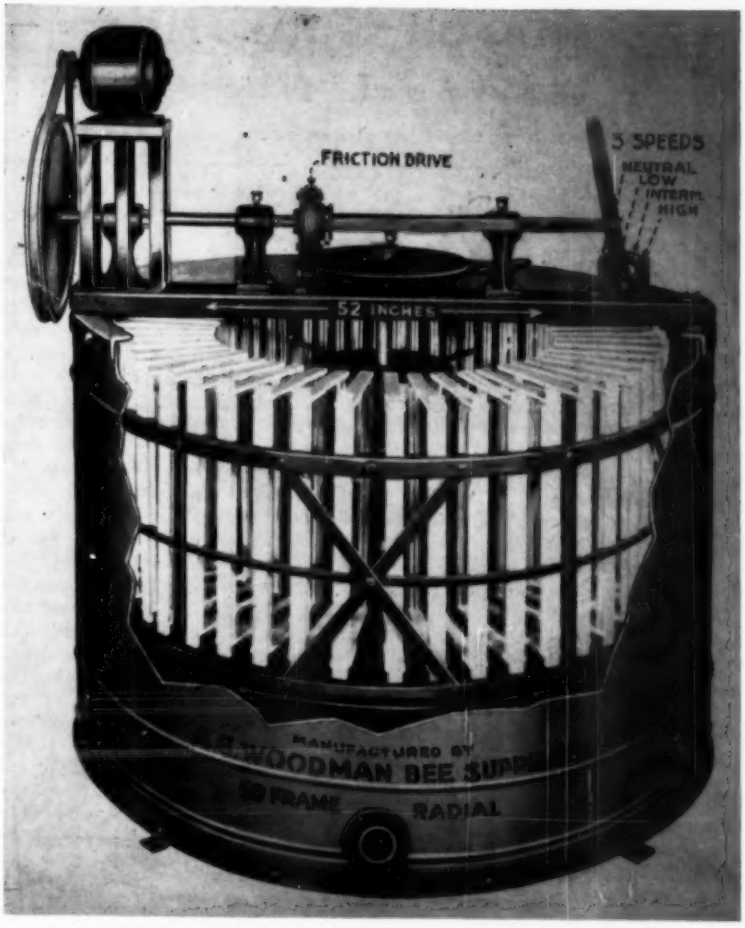
The Honey Emptying Machine
ABJ - 1888

I regard this invention next in importance to movable frames, and since using it, I have wondered why some "Yankee" did not invent it years ago.

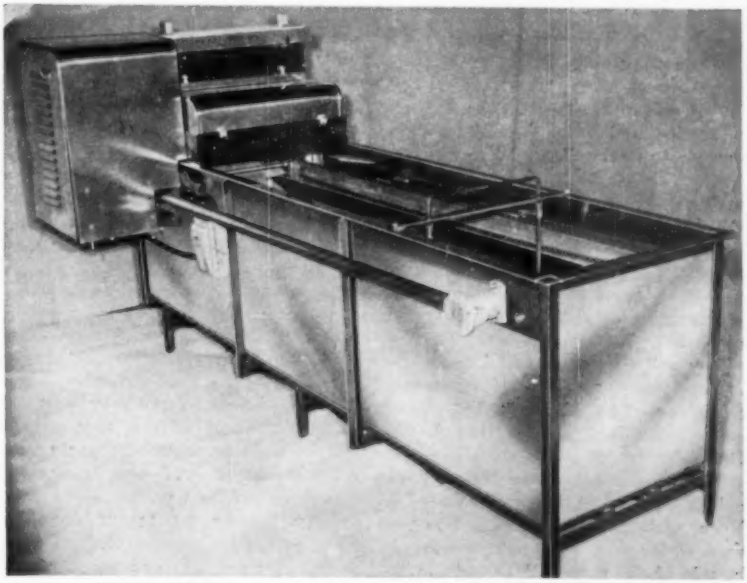
I have one of my own construction which works admirably. I think that with this machine and the Langstroth two-story hives, we can get large amounts of honey. This style of hive seems better adapted to this mode of getting surplus honey than any other; for the reason that we are not obliged to disturb the combs in the breeding apartment. No beekeeper can afford to be without one of these machines.

1888

Ever learning and exploring the fields of thought, speculation and invention-still the best apiarists have yet much to learn about beekeeping, and the manipulation of bees, and the marketing of the honey product. Much yet remains to be learned, much to unlearn, and still more to be developed from that which has not yet evolved from the human brain.



Present day friction drive, radial type extractor holding fifty frames.



Commercial comb uncapper. When used with radials, and with automatic super lifts it offers the fastest honey handling setup for today's commercial beekeeper.

EXTRACTOR EVOLUTION— Way Back When?

by Glen Holterman

About 1905 honey was pulled in from the bee yard in a democrat by strong men to be extracted in the nearest barn. We used a six-frame reversible extractor which cleaned the combs quickly. The small circle of this extractor has a big advantage. A strainer of cheesecloth was supported under the reel and it removed most of the wax particles. The extractor was on three legs so honey could be run directly into 700 pound glucose barrels which were sold to individual packers.

Then in 1912 came the 12-frame reversible, engine-driven extractor with two sitting side by side. This kept four uncappers on the move with cold honey knives. These knives were thin, narrow and just long enough to cross a Langstroth comb; no adverse weight or leverage.

At this point we started to do our own bottling and packing. A rotary honey pump was placed between the two extractors to raise the honey into 6 foot 3200 pound tanks. In July with temperatures around 85, the wax came to the top in a few days where it could be skimmed off. A shut off had to be placed in the pipe line from each extractor so air from the empty side would not stop the draw from the full one.

We had plenty of trouble with that pump until Huber Root made us a visit one day and solved the problem. We were running it too fast! About 140 revolutions was right. Fast speed mixes in fine bubbles that do not come out readily as well as delivering less honey. The formula for speed is to multiply the diameter in inches by the known revolutions of the drive pulley and divide the result by the revolutions desired and you will have the diameter of the drive pulley. The extractor cross shaft is usually used as a jack shaft reducer so the motor pulley will not be too small.

Then came the Markle automatic reversible. The eight baskets were set on individual short upright shafts. Each basket was supported in the middle of the bottom so they turned a half turn each time you pressed a lever, without slowing down. The top was wide open for easy access. A bicycle chain made all baskets move together. A few times these baskets got stuck in the radial position but we immediately corrected that for we never recognized the new over-the-top bar principle.

Art Hodgson worked with us for nine years and made and patented the next step by running whole supers full of uncapped combs like a wagon wheel. This extractor had a liftable cover to catch the honey which went up as well as down. The top bars were parallel to the direction of rotation. Honey really ran when four pairs of supers started to rotate. No broken combs resulted and all combs were changed to dry supers in one move by turning the supers upside down on a table and reversing the operation with a dry one. To keep the combs from falling, you turned the top of the super against the edge of the table and turned it upside down. One set of supers was filled by the uncappers while the other was extracting. Little balancing trouble was apparent.

This was followed by the radial extractor which is now a must. This principle was discovered by our Art Hodgson at about the same time as some man in the States. It is the simplest extractor and combs need not be broken down if slow speed is used until part of the honey is removed. Then you can run the combs as fast as you like unless pollen is present in quantity. Spacers in the bottom of the reel are not necessary. Combs empty better with the bottom bars filling the inner circle. We simply turned the bottom support circles upside down.

The ideal honey house now is a spilt-level building where honey runs by gravity through the strainer into a tank and is pumped to bench-high filling tanks.

Waterford
Ontario

All the bells of heaven may ring,
All the birds of heaven may sing,
All the wells on earth may spring,
All the winds of earth may bring
All sweet sounds together.
Sweeter far than all things heard,
Hand of harper, tone of bird,
Sound of woods at sundown stirred-
Bees are swarming-welcome word,
Sounding in warm weather.

MAJOR HRUSCHKA IS GONE

ABJ - 1888

Major Von Hruschka, the inventor of the honey extractor, is dead. He died in Venice on May 11, 1888. This we gleam from the *L'Apicoltore* for June, which is just received. Major Hruschka was a retired Austrian officer, and the invention of the honey extractor occurred in this way: His apiary was in Italy, and one day when the Major, who was a most observing and critical bee-keeper, was in his apiary, his little boy came there to him. The boy had a small tin pail tied to a string, which he was swinging, boy-like, around and around in a circle, holding the end of the string in his hand.

The indulgent father gave the youth a small piece of comb filled with honey, putting it into the little pail. The boy, after awhile, began to swing the pail again as before, with the honey in it. A few moments after, he became tired of that amusement, and put the pail down to talk to his father, who took it up, and, by chance, noticed that the honey had left the comb and settled down into the pail, leaving the comb perfectly clean that had been on the outside of the circle when the boy was swinging it around. The Major wondered at the circumstance, and, turning the comb over, bade the boy swing it again, when, to his great astonishment, the other side of the comb also became perfectly clean, all the honey being extracted and lying at the bottom of the pail.

During the following night Major Von Hruschka, after going to bed, commenced to think the circumstance over; he thought, and thought, and his thoughts troubled him so much that on the morrow he commenced a series of experiments which resulted in his giving to the world the first honey extractor, which, by whirling, something like his son whirled that little tin pail, gave him the pure liquid honey, extracted by centrifugal force, leaving the honey-comb entirely free from the liquid sweet, which he gave again to the bees to fill; allowing him the pure honey for making wine, mead and metheglin, or honey cakes, as desired, without employing the troublesome and primitive method in use up to that time, of mashing up the combs containing the honey, pollen, and sometimes brood, too, to let the honey drain through the cloth in which it was placed—giving what was formerly known as "strained honey."

Chas. Dadant

Sense & Nonsense

Beautiful billows of blossoms,
Rolling o'er orchard trees,
Pink and white foamy the blossoms,
Floating away in June's breeze.
Would I might rest here forever,
Bathed in these apple-bloom seas.
Here 'mid the wealth of the orchard,
In silence, save sound of the bees.

A strong colony, when honey is plentifully gathered, can build seventy-two square inches of comb, containing four thousand cells, in the course of twenty-four hours.

In olden time, in England, any man who wished to begin beekeeping, had no difficulty in borrowing a swarm from a neighbor; and a year or two afterwards he repaid it by a first swarm, with from five to ten pounds of honey for interest, according as two or three years had passed since he borrowed.

The Credit Belongs to the Bees.— Farmers say that honey is their only product that is free from vermin. Let due credit be given the bees for this. They certainly take great pains to "comb" it.

The enclosure in which bees were kept was formerly called the beecroft, where immense numbers of these insects were housed. In royal inventories we find "honey casks" enumerated in great number. Honey was royal food; hence, perchance, the nursery line:—"The queen was in the garden eating bread and honey."

It is certain that 16,000 bees in one hive will collect more honey and wax, than the same number lodged in two different hives could possibly do.

PACKAGE BEES

QUEENS **QUEENS**

Dadant's Starline Queens and Bees - Finest for honey production and very gentle to work with. A bee you will be proud to own.

PACKAGE BEES AND QUEEN	1 - 25	25 - 100	100 up
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1 to 25	$1.75
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Nice large queens	1.00	.95

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Echoes from the Past

My Position in Regard to the Extractor.

By Wm. F. Clarke

The report of the recent Ontario Bee-Keepers' Convention on page 72, is a lop-sided affair. Some of the most interesting discussions are omitted, while special prominence is given to the sayings and doings of the reporter and his father-in-law. I do not propose supplying its omissions, but crave space for a few remarks concerning a single reference made to myself. The "report" says: "W. F. Clarke, of Guelph, condemned the honey-extractor, but the members present, however, objected to this." Objected to what? My condemning the extractor? Not at all. I was allowed entire freedom of speech, without objection on the part of any one.

There are few bee-keepers of judgment and experience who will not concur in most of the remarks I made on that occasion. I said, it was doubtful whether, on the whole, the extractor had been beneficial to apiculture. It had opened the door to adulteration of honey, and had been used most injudiciously by many, who tore up the brood-nest without mercy, took large quantities of unripe honey, and really put on the market an article of *strained* honey, so much brood, pollen, etc., being thrown out of the cells. The extractor had been the means of lowering the price of honey, and if not used until the honey was ripe, and the cells were capped, I questioned if extracted honey was more profitable than comb honey. While preferring not to use the extractor myself, I strongly urged those who did use it to leave the brood-nest intact, and do their extracting from the combs of an upper story, as recommended in Mr. Malcolm's excellent paper, out of which the discussion arose.

The one point of difference between myself and other bee-keepers present was in regard to the question whether, all things considered, it was advisable to use the extractor at all. My own preference for comb honey is shared by me with some of our best and largest producers of honey, and this question is one that must come to the front.

I doubt much if the honey market will ever be in a satisfactory condition, so long as large quantities of the inferior extracted article are produced. These are the great disturbing elements, and no one can read the quotations and note the difference of price between the cheaper grades of extracted honey, and first-class comb honey, without feeling that the production of extracted honey, so far as it is carried on, should be rigidly limited to that of the highest quality.
St. Thomas, Ont.
— 1888

DOES BEE CULTURE PAY?

When any new enterprise is started or any old employment of man which, in this fast age to make money in large sums, has become neglected, and the thoughtful man suggests its revival under the advancing help of science, the question is at once, "Does it pay, or will it pay?"

So it is with bee culture. It has paid all who have given it proper attention, and it pays well even those who give it only heedless care, and keep bees more as an amusement for old age or young girl or boy in the family, that their attention may be sometimes agreeably taken up in watching this laborious and ingenious little worker, whose labors furnish such a luxury as honey. We give the following concise answer to this question from one of our exchanges:

"We believe that no stock upon a farm will pay better than a few good stocks of Italian bees. They provide for themselves without giving their owner any trouble whatever, and with very little attention at certain seasons of the year and with suitable quarters provided for their health, shelter and workshops, they will yield a rich crop of fine marketable honey which will always sell at a good price.

"If there is a land on earth which should flow with milk and honey it is ours, and yet owing to our own improvidence, there are very few farmers who have either milk or butter to sell, or even to supply their own wants in abundance, and scarcely one in a thousand who has honey for sale. Tell them that they ought to keep a few stocks of bees and raise honey, and one will tell you "his grandmother tried it once when he was a chap and she had no luck with them." Another will say he does not want to have "his wife and children stung nearly to death by the darned things." Another will tell you how he "knew a man who has kept bees for the last fifteen years and never made a cent from them." Another will say he has more than he can do now (raising cotton, we suppose, on all his land, and hauling bought hay and corn for his stock,) and cannot afford to "bother with bee gums."

"The management of bees is very simple, and can be easily learned. A little looking after in the morning when they fly, and in the evening when they return, a little patch of white clover and buckwheat, and a few plants suited for bee food, and a little protection in the winter, are all that is needed."
—*Baltimore Sun.*
— 1874

AMATEUR BEE CULTURE

Although much has been written on the science of bee culture, yet but few of those who engage in it meet with success. It is with bee-keeping as with every other branch of industry, those who engage in it must understand it, if they expect to succeed.

If one desires to engage in bee-keeping, he should, in order to be successful, thoroughly acquaint himself with the nature and habits of the bees. He then understands how to select a situation for an apiary, and provide for their wants. He sees the advantages of frame hives, and is enabled to select intelligently from the many placed before the public. Like a master builder who thoroughly understands his work, he commences bee-keeping, knowing what to do. Such a one is sure to succeed. In my experience, however, I have found only now and then one who commences in this way. Ordinarily, almost every one commencing to keep bees is entirely ignorant of their nature and habits, and frequently all the knowledge acquired is by slow experience. Is it a wonder, then, that so many bee-keepers fail to be successful? Let any one who intends to keep bees first purchase some practical work on bee-keeping and thoroughly read it, ac-

quainting himself well with the theory before he commences. Let him, in commencing, purchase not more than two or three colonies; and even then he will find his bees increasing faster than his experience. It is a sad mistake that many fall into, when commencing bee-keeping, to purchase a large number of stocks. It will not do for one comparatively well read up in bee-keeping, but has not the experience, much less for one who has no knowledge whatever of bee culture. A few years since a man entirely ignorant of bee culture was suddenly attacked with "*bee on the brain*," and as a remedy purchased a thousand colonies and commenced bee-keeping with visions of honey before his eyes; and the result was he failed. Several similar instances have come under my observation, even when only fifteen or twenty colonies were purchased. Two or three stocks are quite enough to commence with, and they ought not to be purchased unless one has some knowledge of bee-keeping, or at least a practical work to guide him. But with a fair knowledge of bee-culture and the use of frame hives, rightly constructed, success in bee-keeping is certain, when proper attention is given to it.

J. H. Thomas.

Brooklin, Ontario.

THE AMERICAN BEE JOURNAL

Everybody is speaking in the highest terms in regard to the intrinsic value of the American Bee Journal. It is admitted to be the periodical that has so long been needed by the Apiarians of this country. Editors of the Agricultural papers are beginning also to appreciate its worth. They can now make good and judicious selections respecting the management of bees, thus benefiting their apicultural readers more than they possibly could by the publication of the *milk-and-water* articles with which they are frequently favored. The American Bee Journal merits, and, therefore, justly deserves a permanent existence. I trust that the Agricultural Editors, as well as the editors of other periodicals, will continue to manifest a willingness to lend a helping hand in sustaining the only *American* Bee Journal, and thereby advance the bee interests of this country.

M.M. BALDRIDGE

Middleport, Niagara Co., N. Y., 1861.

SWARMING BEES

There is little danger to be apprehended from the bees when they swarm, because at that time they are well gorged with honey, with which they take care to supply themselves richly before leaving their maternal home, as an outfit for organizing their contemplated new establishment. At such times the naked hand may be thrust up into the middle of a swarm as it hangs on a bough, without their showing the least resentment; which, were they in their hive, they would not suffer without the utmost indignation. But if they have been hovering about long after swarming, before alighting and clustering, or have been clustered on a limb an hour or more after swarming, so that much of the honey with which they had supplied themselves has been digested, they will be apt to become irritated if not gently managed at hiving. — 1861

TWO HUNDRED YEARS — This bee market in Holland has been in continuous operation as an annual event every year for 200 years. Note all the old hand-made hives of straw.
(Photo from O. F. Kleiss, Wageningen)

The American Bee Journal and the American Poultry Journal, under Thomas Newman, were both published in this building, handy to the wood engravers and the printing shop.

The Commercial Operator

The Crystal Ball

A Visit with John Hefflin

It had been some time, about ten years, since I visited with John. At that time I was amazed at the modernization of his outfit. It is a strictly commercial outfit that represents the very latest advances in beekeeping management. By following and reading about the tremendous changes in general farming I realize that the farm operations of 1970 have evolved into a factory like method of doing things; that farms are so mechanized that every phase of production has reached volume size; eggs in fabulous amounts, cattle genetically developed for increased milk, cream and beef; grains and fruit in highly improved quality; with one crop now increased to two or more.

But somehow I was not prepared for John's entry into this picture. The last time I saw him he was a large scale producer with five thousand colonies of bees; but now he has twenty five thousand and he works no harder than with the smaller number; nor does he have any more help. The helpers are skilled and better paid but they can handle a thousand colonies each, with less difficulty than they used to handle five hundred.

The outstanding changes have been in the mechanics of operation. Huge loads of bees can be moved quickly with ingenious handling equipment hundreds of miles at a move; then moved again and returned home at the end of the season, like the Australians do with their multiple moves each year. Producing colonies are built to flow strength after being moved to location with multiple hybrid queens that turn out very high producing populations whose producing power is way above what we used to be able to get. The honey is run through a plant so highly mechanized that tremendous crops can be quickly handled and moved to market in just a fraction of the time it used to require.

This visit to John was highly profitable for me even though I am a Sideline Operator as I found that much that he does I can do, only on a smaller scale. I guess beekeeping does pay and handsomely for a smart operator, big or small.

Rutherford Climbs From A Hobby To A Commercial Operator

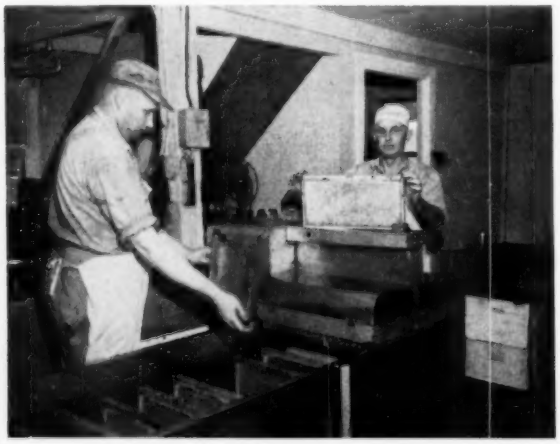
by Mary Lee Anderson

(Originally written under the title "Bees in His Bonnet" in the Journal and Courier, Lafayette, Ind.)

Most people have jobs and many have hobbies. When a man turns a hobby into a commercial venture, it's a pretty sure guess that he enjoys it. Forty-five years ago Dallas G. Rutherford of Lafayette, Indiana acquired his first colony of bees strictly as a sideline. He now is the owner of his own commercial honey distribution outlet and produces from 1,000 colonies spread over seven counties.

This career began when he was a boy who loved the life of animals and insects in the woods near his home on the farm. Nature study came to him as naturally as milking in the morning. In his early years, Rutherford supplemented his growing experience with short courses in beekeeping at Purdue University which he considers have been invaluable to him.

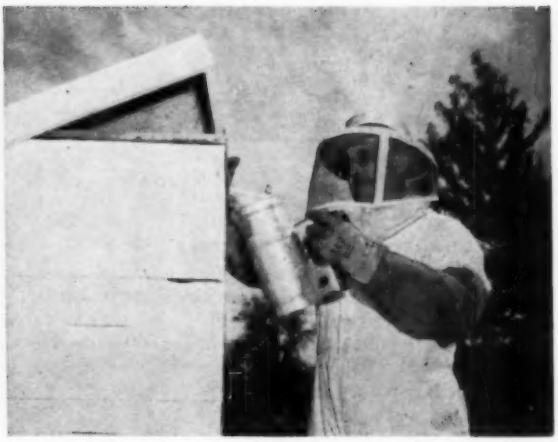
The pictures here show some of Rutherford's commercial operations.



Automatic uncapper in Rutherford honey house. Combs are extracted in large radial.

Filling sixties from settling tank, so far a job not well solved by automation.

Rutherford yard; deeps and shallows.



Dallas G. Rutherford, Lafayette, Indiana, a 1000 colony operator.

Incorporation

Bee Industries, Inc., with principal place of business to be in Phoenix, Ariz., has filed articles of incorporation listing $25,000 capitalization to carry on the general business relative to the production of honey. Directors will include Eugene F. Wheeler, 7532 North 16th Lane, Phoenix, president-treasurer, and Gloria Ann Wheeler, vice president-secretary.

These two incorporators also have filed articles of incorporation for Superior Honey, Inc., Phoenix, listing $25,000 capitalization, to carry on the general business relative to the production of honey.

Ernest W. Fair
Boulder, Col.

Feeding Bees for Clover Seed Pollination

The above title is the subject of an article by B. A. Cooper in the British Bee Journal for July 18.

The conculsions reached by the author were that the feeding of sugar syrup to bees stimulated the pollen collection in these colonies which had far more pollen than the average of the rest of the colonies in the apiary. This was particularly true during the part of the season when pollen was in short supply in the fields. The stimulation by feeding seemed to urge the bees to get out into the field to gather pollen. The age of the queen seems to have made very little difference.

Also the recommendation of Mr. Cooper is that in furnishing pollinating colonies to fruit growers and others, they should be furnished on the basis of "per frame of brood" rather than on the basis of the entire colony.

This, of course, is well understood. Just too many people rent bees for pollination, feeling it a good chance to hire out nuclei and build into strong colonies during the pollination season.

Mostly, however, both beekeeper and farmer now realize that good strong high quality colonies are best for satisfactory pollination effort.

One Hundred Years of Beekeeping In British Columbia

This is the title of a 140 page stiff cover book written by W. H. Turnbull who was no doubt best able to cover the years of beekeeping in British Columbia since he was for many years in charge of inspection in the province as well as a large beekeeper himself.

The book is a story of beekeeping in that province beginning with the first bees brought in by J.B.D. Ogilvie in 1858. The advent of the movable comb hive, and the settling in that province, as well as the need for a native sweet hastened the spread of beekeeping until now bees are kept even in the most remote sections of British Columbia.

Education in beekeeping has paralleled the spread of beekeeping itself and the Provincial Association, the Inspectors and Provincial Apiarists ali had their part. British Columbia is, of course represented in the Canadian National Beekeeping Council, has its own university short courses etc., All hail to its progress and to Turnbull's good work. Copies of the book may be obtained by sending $2.00 to Mr. J. Corner, Provincial Apiarist at Vernon, B.C. Canada.

Conneaut Salesman Retires

After 45 years, W. R. Hubbard of the Conneaut Can Company, (known to the trade as, Bill) is hanging up his traveling shoes, or perhaps better to say 'traveling tires.'

Possibly no can salesman, at the present time is personally acquainted with so many beekeepers, dealers and jobbers of honey supplies. His territory extended over a good share of the United States. One lesson learned early in his experience was that you call on beekeepers whenever and wherever you can find them.

Bill's main regret at retiring is the severance of relationship with the honey industry. The industry, as a whole, is a fine, likable group and has been most generous to him and to his company, the Conneaut Can Company, Conneaut, Ohio.

As yet, no successor has been appointed to take his place but orders for 60 lb. cans will continue to be welcomed and given good attention by the main office at Conneaut.

The Sideline Producer

The Crystal Ball

A Visit with Wes Oburn

I am always making pilgrimages to see how my beekeeping friends are doing and I like especially to go to see folks I have not been able to visit with for a period of time. This season I had a really rewarding time with Wes Oburn.

He has a fairly decent beekeeping location, although perhaps not as dependable as it should be. I urged him to scout out more satisfactory spots by studying his locality maps for soils suited to clovers and farming suited to pasture and live stock. I believe then, with relatively small yards, he could get better paying crops most years and he can't do this by sticking to his present locations.

Wes quit railroading about ten years ago and increased his bees to about three hundred colonies. He has also developed ground for berry production and has gone into poultry.

He has learned how to peak up his bees so he gets top crops (could get better if his locations were more carefully chosen). He has cut his operating costs way down and does about everything himself. He markets his own honey in beautiful honey packs; liquid, comb, cream, candies and side products for food use.

His berries also are top quality and stores for miles just won't buy from any other grower if Wes has a berry crop. And his hens, you should see them. The poor dears never set foot on the ground and he runs them rapidly through both egg and meat production, not for wholesale but for products he has developed. Many housewives won't buy any eggs but Oburn eggs. And, by golly, they do taste special as I can testify.

But, those bees of Wes's, they get me. Never saw more even colonies, bees just like kittens, everything as neat as a pin. Wish my nondescript outfit were in as good condition. Maybe it will be someday when I "retire" like Wes has!

Study Of The Honey Bee Sting

by John Fountain*

When I was taking biology in High School, I was required to prepare a semester project. I was quite at a loss to know what to report on, but upon investigation found that there were quite a few honey bees around the shrubs near our house. Knowing little about them and wishing to learn more I decided to report on them. I made my semester project on the honey bee in general. My biology teacher, Mrs. Richard Childs, Science Department of Catalina High School, Tucson, Arizona, advised me that if I limited myself to one part of the bee I might have a good science fair project. I chose the sting because I wanted to find out why such a small weapon could cause so much pain.

(*I am fifteen years old and a freshman at Catalina High School, Tucson, Arizona.)

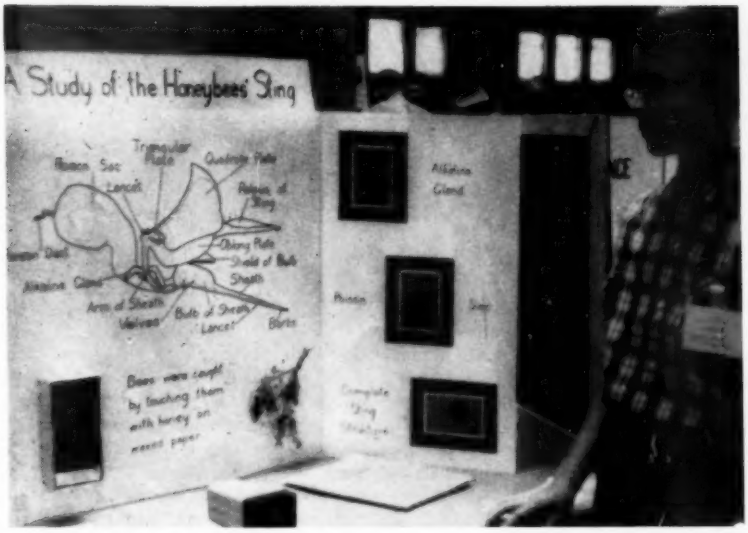
In my attempts to study the honey bee I realized the need of actual specimens for observations. I noticed that the bees seemed to cluster about the blooms of an African sumac *(Rhus)*, a creosote bush *(Larrea)*, and the nectar from our arborvitae. I tried to lure them by setting out honey, but the shrubs seemed to be a greater attraction. Becoming a bit perturbed, I fastened the waxed paper with honey on it to a broom and gently "swatted" a bee while it was sucking nectar. Of course it stuck to the honey, from which I quickly removed it and, anesthetizing it with ether, removed the sting. Applying this method several times I built up a little collection of stings from which I made permanent slides.

Microscopic photo by Fountain of inner end of sting.

The barbed end of sting with sliding components.

From these slides I took photomicrographs with a Leica D. B. P. camera on a Micas micro attachment using an American Optical Company (Spencer) research microscope and binocular microscope, using 35 mm. colored Anscochrome film. This equipment was the property of the Catalina High School Science Department.

I found that the poison is contained within a poison sac which is made of a chitinous, not muscular, material; thus the poison must be pumped out. This is done by the valves in the poison bulb of the sting's sheath, which are pulled backward and for-



John Fountain, 15 year old author, of Tucson, Ariz. His study was a school biology project. John also received first place in the Southern Arizona Science Fair in the Zoological division. He is also a member of the Tucson Boys' Choir, frequently on television and on tour with 54 concerts. In summer they gave concerts in Australia, New Zealand and Hawaii. John is studying voice and taking clarinet lessons.

ward forcing the poison into the bulb of the sheath, through the poison canal, and into the wound. The poison is principally formic acid.

The worker's sting has large barbs and weak muscles for holding the sting system in place; thus when it stings someone, the sting comes out, pulling part of the intestine of the bee also, and causing death to the bee. The queen has strong muscles and small barbs; thus she can sting over and over again without mortal danger. The drone has no sting or modification of one. After the sting comes out of the bee the palpi keep driving it farther into the wound. Most books which I have read report the death of the bee immediately after extraction of the sting. However, I have found that the bees examined have died in not less than two and often as late as five hours after the sting has been removed.

My finished project consisted of a poster with a large diagram of a sting with the major parts labeled. On the wings of the poster were mounted six 3" x 5" reproductions of the colored slides which I took of various parts of the sting. On the central portion, lower left, was a box containing live bees on a square of comb honey. Lying on the table were my two notebooks, one on the honey bee in general (my semester project) and one on my observations of the honey bee's sting. Also on the table was a viewer with the slides taken through the microscope and a microscope with my permanent microscope slides on it.

I entered my project in the Southern Arizona Science Fair at the University of Arizona, Tucson, Arizona, where I received first prize in zoology, a blue ribbon, and third prize in the general biological division, a bronze medal and a check. I also displayed part of my project with the Southern Arizona Beekeepers' Association exhibit in the annual La Fiesta de las Flores (Tucson Flower Show). I also displayed my project and gave an explanation of it to my school science club, and displayed it with other school science projects at a Parent Teachers Association meeting.

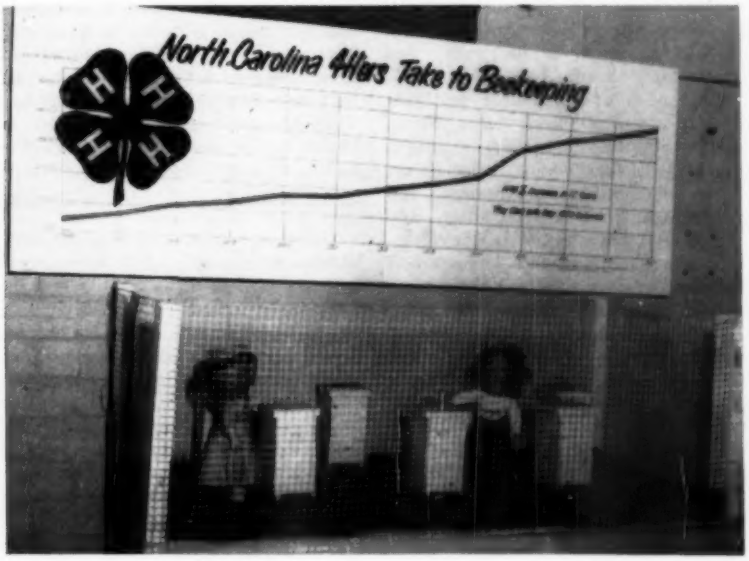
I enjoyed very much my study of the honey bee, as well as learned a great deal about it. Fortunately I did not get stung once.

Arizona

4-H Club Models

by W. A. Stephen

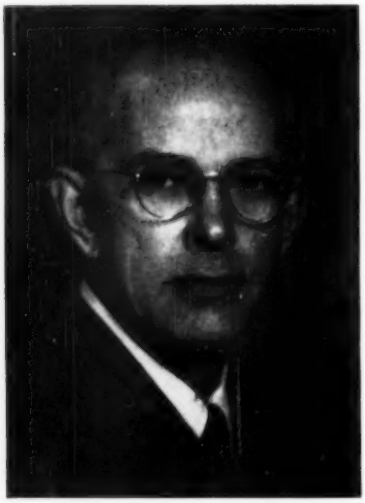
Dolls and model hives at the North Carolina State Fair, to add life this year to a graph showing the advance in beekeeping in the last 12 years. Gerald Sitton and Davis Norton made the dolls for a display in a cafeteria window, then donated them to me for club work.



Science in Apiculture

Boron Deficiency As A Probable Cause Of The Failure Of Bees To Visit Certain Flowers

by Dr. Francis O. Holmes



Nectar secretion in flowering plants has long been known to be influenced by such factors as *sunlight*, which is a prime essential for it, *adequate moisture*, which is also requisite, *high altitude*, which is generally favorable, and *supply of nitrogen*, which may act adversely if in excess. Shuel reviewed the literature on this subject thoroughly in 1955 (American Bee Journal 95:229-234).

Dependence of nectar secretion on an adequate supply of the so-called minor, or trace elements, seems not to have been noted in the published literature of beekeeping. The chemical constituents of soil that are needed by plants to supplement plentiful supplies of the major fertilizer constituents nitrogen, phosphorus, and potassium are usually considered to be the elements iron, copper, zinc, boron, manganese, magnesium, sulphur, calcium, molybdenum, and vanadium. These minor soil constituents or soil supplements are required by plants in varying and often very small amounts.

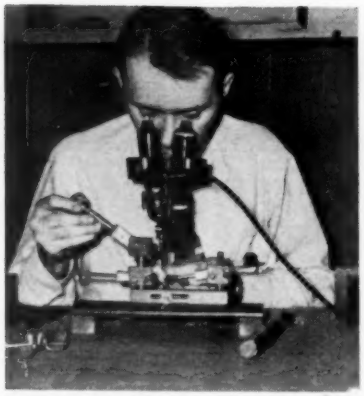
During the past summer, experiments with soil supplements provided some evidence that a deficiency of one minor element, namely boron, may render certain plants unattractive to honeybees, and that small amounts of this element, applied in the form of common borax, may quickly restore the conditions that attract the bees to their blossoms.* The evidence at present available suggests that the boron as such is not attractive to bees but that this element acts by influencing nectar secretion favorably.

In early July of 1959, it was observed that flowers of alsike clover *(Trifolium hybridum L.)* were abundant on the northern slopes of Craney Hill, near the town of Henniker in southern New Hampshire, but that the honeybees that were present ignored these blossoms completely. Incoming nectar from other sources was by no means plentiful. Hence the conclusion seemed inescapable that nectar secretion by the alsike clover was inadequate in quantity, quality, or both quantity and quality, to attract honeybees.

On July 4th, one small plot of this clover, covering an area of about one hundred square feet, was treated by scattering over it powdered limestone that contained relatively large amounts of magnesium, that is to say, what is known as high-magnesium lime. Another plot of this size received in the same manner a mixture containing seven minor elements: iron, copper, zinc, boron, manganese, magnesium, and calcium. On the day of application and on the following day, no honeybees at all were observed on the blossoms. The next day, however, a single honeybee was observed working on the plot of alsike clover that two days earlier had been supplied with the mixture of minor elements, but none visited the clover that had been supplied with high-magnesium lime, or the untreated clover. During the following days, numerous bees worked on this minor-element plot and some of them were observed scouting over neighboring areas of clover without working the flowers. A maximum of honey bee activity was observed on the fifth day after the mixture of seven minor elements was applied. Bees visited the plot thereafter for many days, but their activity gradually decreased until blossoming of the clover ceased in mid-August.

On July 7th, a third small plot of the clover was treated, this time with the minor element boron alone, in the form of a broadcast of powdered borax, amounting to about two ounces of borax on an area of about one hundred square feet. Most of the borax fell on the soil around the plants but some adhered to the foliage. Boron seemed most likely to be the important constituent of the mixture that had been applied on July 4th, because this element frequently occurs in low enough concentration in New Hampshire soils to cause deficiency symptoms in apple fruits (small brownish flecks in the otherwise white flesh of the apple). Deficiencies of the other six constituents of the mixture are not known to be connected with any symptom of deprivation in crop plants locally. Two days after borax had been applied to soil and foliage,

*Professor R. W. Shuel of the Apiculture Department of Ontario Agricultural College at Guelph, Ontario, has kindly informed the writer that he has studied the effect of boron supply on growth, flower production, and nectar secretion in red clover *(Trifolium pratense L.)*. The results of the study have not been published, but they tend to show that the amount of boron necessary for satisfactory nectar production in red clover is of the same order as the amount needed for good vegetative growth and that in areas where boron supply is limiting to growth a small increment of boron might be expected to improve both secretion per flower and the number of flowers. The attraction of bees to blossoms of treated plants of alsike clover and raspberry, as here reported, and Professor Shuel's observations on increase of nectar sugar per gram of flower head in red clover supplied with small amounts of boron seem mutually corroborative.



Science Editor—

DR. WALTER ROTHENBUHLER

IOWA STATE UNIVERSITY
AMES, IOWA

honeybees were working actively on the clover flowers of the borax plot as well as on those of the minor-element plot. A maximum of honeybee activity was observed on the fourth day after treatment with powdered borax.

This repetition of success in attracting bees to previously neglected flowers of alsike clover seemed to indicate that boron was needed by the clover plants in amounts greater than the local soil could provide at that season. The boron was able to change conditions in the clover flowers, presumably by improving nectar secretion, so that honeybees were attracted to visit them very soon, *i. e.* within two days, after its application to the soil around the plants and to some of the foliage.

At the times when boron was applied to alsike clover in mixture with other minor elements and alone as borax, the same two treatments were applied to blossoming everbearing and non-everbearing raspberry bushes (*Rubus idaeus* L.), but honeybees did not visit these at any time during the July flowering period. Early in August, everbearing raspberries in the treated plots began to bloom again. Consideration then was given to the advisability of repeating the treatments of the soil in which they were growing. As a preparation for possible retreatment, the new raspberry blossoms were watched daily until August 14th, but no honeybees were seen on them, despite the fact that a strong colony of bees was located about two hundred feet north of the treated areas.

On August 14th, the treatments of the raspberries with the minor-element mixture and with borax were repeated. No honeybees were seen on treated or untreated plots that day, nor on the following day. As early as two days after the repetition of the treatments, however, bees appeared in moderate numbers on the raspberry flowers in the minor element plot and also in the borax plot (each about one hundred square feet in size). They still continue to shun the raspberry flowers on plants at a short distance from the two treated areas, although treated and untreated plots were separated from each other by no more than twenty or twenty-five feet. The treated spots, and only these, were regularly visited by bees from August 16th to September 13th, when observations were discontinued, except for a brief period of observation on October 10th, when the bees were still found working blossoms on the treated plots only.

This third success, in attracting honeybees to raspberry flowers in late summer by boron treatments that had failed in early summer, is puzzling. Possibly, however, the raspberry plants had suffered from more than one deficiency in early summer, when vegetative growth was still proceeding rapidly. Multiple deficiencies might not have been overcome by the treatments that were given. In late summer, on the other hand, when everbearing raspberry flowers came into bloom on the terminal shoots of the new canes, vegetative growth had almost stopped and all deficiencies in chemical nutrition may have been eliminated with the exception of the boron deficiency at which specific treatments were being directed.

That the improved attractiveness of flowers meant improved nectar secretion seems highly probable, although these preliminary studies are inadequate to assure this. If the bees had been attracted to flowers not so much by more or better nectar as by the presence of boron in the nectar, as though *they* rather than *the plant* required it, presumably they would have found such boron available in flowers soon after the initial treatment of raspberry plants early in the summer, both in the minor-element plot and in the borax plot.

Further experimentation may be needed in subsequent years, however, to determine whether such borax treatments on New Hampshire soils can be made consistently effective in contributing to the improvement of nectar secretion in alsike clover and raspberry flowers and in attracting honeybees to these. In New Hampshire and elsewhere, other nutritional deficiencies may also interfere with nectar secretion and no one remedy may be universally applicable. This year's tests seemed to provide a moderate amount of evidence pointing to the importance of boron at certain seasons of the year for particular plants. They further suggested that boron may not be the only supplement needed in early summer for some plants.

The significance of this year's work lies not only in its emphasis on the possible function of boron in promoting satisfactory nectar secretion in some plants grown on boron-deficient soil but also in its directing attention again to the observation of inadequate nectar secretion by some honey plants in certain localities and to the need for a re-evaluation of various, but specific, fertilizer constituents as possible remedies.
Henniker, N. H.

Antibiotics for the Control of European Foulbrood

The feeding of foulbrood-infected bees with a 1:1 sucrose-H_2O soln. contg. 170 mg. Terramycin-HCl (1) quart and the dusting of the colonies with castor sugar contg. 880 mg. 1/lb. appeared to be effective in the control of the disease.

I. H. Wiese, South African Bee Journal, No. 4, 5-7, 1956.
(from Dr. F. B. Wells)

Rearing Honeybee Larvae on Royal Jelly in the Laboratory

Worker bees raised on fresh royal jelly developed into adults with all queen characteristics. When royal jelly stored 1-4 weeks at 5° was used, intermediate type adults were produced. After storage for 1 yr. at 5°, the royal jelly produced adults with predominantly worker characteristics. It is suggested that the ingredient of royal jelly which initiates or controls differentiation of queens is either highly labile or not available to larvae after storage.

N.Weaver (Entomology Dept., College Station, Texas) Science, 1955
(from Dr.F.B. Wells)

Beekeeping in Other Lands

Honey From Eucalypts In Australia

by Alan M. Frost

Many Australian people believe that the golden honey bought from their grocer comes from Garden flowers. Sometimes the label says "Garden Honey," but this is not strictly correct. The biggest part of the Australian honey crop, which amounts in an average season to 8,000 tons (16,000,000 lbs.) comes from the creamy flowers of the eucalypts. That sturdy old red gum on the river would yield some 100 pounds of honey in a good year. There may be 5,000,000 flowers among these green leaves.

Although the flowering time of Eucalypts is regular in that the blossoms open about the same week each year, there is no set rule to govern the year when different trees flower. Red gums in the huge forests along the mighty Murray River blossomed profusely in the 1956-1957 season from Swan Hill to Robinvale, approximately 200 miles. No one knows in which year they will flower so heavily again. It may be next year, it may not be until 1962. Into this area from 3 states came some sixty thousand colonies of bees. The average distance beekeepers moved would be in the vicinity of 300 miles.

Beekeepers generally say that red gums can be relied on for a honey crop about every three years. It is a constant puzzle to beekeepers why eucalypts will flower in one area one year and not flower in another area. Strange to relate, a tree planted by man often flowers every year. Plantations of sugar gums "Euc. Cladocalyx" in the western districts of Victoria flower and yield fairly regularly every year.

Then again, because trees flower heavily does not always mean that they yield honey. Some varieties of eucalypts are more reliable honey yielders than others. Red stringy bark (Eucalyptus Macrorrhyncha) is the most reliable. Rarely does this flower without yielding honey.

To determine whether a certain variety of eucalypt will yield honey a test can be carried out, even three months before flowering. By drilling a short distance into a tree and pouring an iodine mixture onto the sap wood and observing the color the wood turns, the starch content can be ascertained. The darker colors denote more starch. The higher the starch content the greater the sugar. If excess sugar is present nectar will be secreted more heavily in the flowers.

Many years of experience have taught beekeepers which trees yield the most honey. You will hear them reminisce of the great red gum flow at Mathoura, New South Wales, in 1945, when beehives in that area produced some 250 pounds of surplus honey each from this one variety

Red Box in bloom (Eucalyptus Polyanthemous). The second tree with the white trunk is manna gum (Eucalyptus Viminalis). This species is favored by the Australian cuddly Koala bear.

A community camp. Four beekeepers operated from this central camp.

in 5 weeks. Mathoura forests have been of little value to beekeepers since that time.

To investigate the coming season's honey prospects beemen travel many miles during the winter months when their bees are not producing honey. They closely watch the budding of eucalypts. In the early stages new growth appears on the tops of the trees and this is followed by tiny buds. Several inspections of the formation of these buds may be necessary. Sometimes insects will drill holes in the buds, causing them to drop off and ruin the honey prospect. When this occurs beemen must look for another likely flow to provide honey during this period. The time from the formation of the buds until flowering varies considerably in different species. For example, Grey box "Euc. Hemipholia" can produce a crop of buds and flower in four months whereas red stringybark commences to bud fifteen months prior to flowering.

As each variety has a different flowering time during the year, and some of these flower one year and some the next, it is necessary to keep a record of these flowerings so that some indication can be had to show when trees may next bud heavily.

Another factor which must be considered by apiarists is that some eucalypts provide essential food for young bees in the form of pollen, whilst others do not. The well known yellow box variety "Euc. Melliodora," whilst producing a beautiful honey, can be dangerous to bees through its inability to produce the necessary pollen. Hives quickly become weakened in bee strength through insufficient pollen. A method of overcoming this is to select apiary sites so that pollen is available from another source, such as a pollen bearing eucalypt flowering at the same time, or from ground flora such as clover, or even capeweed, which likewise would blossom at the same time as yellow box.

The average honey production per hive in Australia is higher than any other country in the world. This is made possible by our native eucalypts and the long honey season. In Northern states the bees can gather nectar all the year. Even in the south 7 months of honeyflows are usually experienced.

Euroa, Victoria
Australia

Honey Flora of Southeastern Queensland (Australia)

Through the kindness of the Director General of the Department of Agriculture and Stock at Brisbane, we have received a copy of the 200 page book with the above name, written by S. T. Blake and C. Roff. It is well illustrated.

When we think of eucalypts we know little except that they grow to some extent in California and that Australia is their habitat. Yet this book devotes the first 80 pages of the book to the eucalypts, and they are divided into sections; bloodwoods, boxes, gums, ironbarks, stringy barks and other eucalypts, all honey bearers and all distinctive.

Then there are the tristanias, angophoras, tea-trees, banksias, callistemons, wattles, mangroves, she-Oaks. Only the last 25 pages of the book are devoted to weeds and miscellaneous plants.

The book is revised from the authors' articles in the Queensland Agricultural Journal; the volumes from May 1953 to November 1956.

This is a highly commendable book and acquaints one with the dependence of the Australian beekeeper on the natural flora of the region.

There is no price mentioned on the publication since it is a government work, but we assume that check to the amount of $5.00 to the Director General as above would receive his consideration.

Beekeeping in Russia

The Bee World in its July issue, has a very interesting article on beekeeping in Russia by N. M. Glushkov. There were some ten million colonies of bees in Russia according to census takers previous to World War I.

Subsequently, during the war, the number of colonies was greatly decimated and again during World War II. Now the number has just about reached the old level of ten million colonies.

The races of bees in general used are the Caucasian bee and the dark forest bee of the steppes which is related to the European races.

Some six regions are outlined as being specifically different and requiring different methods of administration of the apiary.

Demand for beehives is approximately 300,000 each year and the common practice is to change the queens after every second year, taking the new breeder from the highest productive colonies.

The production of honey per colony is quite varied as it is here, going as high as 200 pounds per colony in the better locations in the best years.

Clover Seed Pollination in England

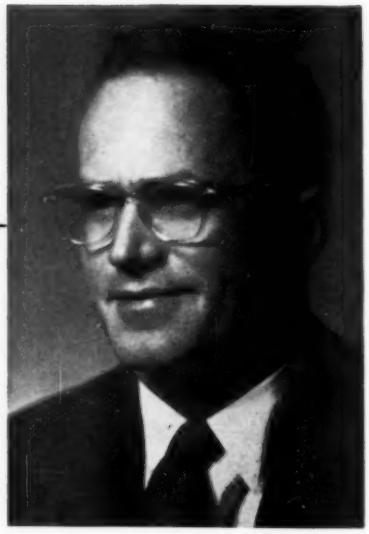
In the British Bee Journal for July 18 Beowulf Cooper goes quite at length to explain his experiments with bees operated for pollination. It appears that they must be handled quite differently from honey producing colonies. One thing quite certain is that such bees used for pollination only profit by copious feeding.

Bees unfed during the pollination season apparently gather miscellaneous pollens whereas bees which are fed are inclined to go to the one plant of clover and make for a better stand of clover and of clover seed.

In all cases colonies which are gaining in brood strength are desirable ones for pollination

The Beginner and Novice

Editor - W. W. Clarke, Jr.
204 Agricultural Education Building
Pennsylvania State University
University Park, Penn.



• *Question from—*
Rev. Lyle Sensabaugh
LeRoy, Illinois

I am a new beekeeper. I may never be an old one, meaning that I may grow discouraged. I read with interest your question and answer columns.

I live in Central Illinois and we had an abundance of honey. I had sixteen supers off of five colonies. I left one on each hive for winter as I certainly had plenty. I had considered the whole season one of interest, a lot of experience and one of good profit.

Now I am wondering if I will have any bees next season as I am finding a considerable amount of wax moth larvae in my supers of honey. If it is there certainly it will be present in the brood frames. I have looked and looked but in all my back numbers of Journals I find no articles on this.

Can this be controlled? My colonies are no exception and if this is true, this larva must be present in a lot of honey frames. I am not planning to go into the business of selling honey. I do all this for a pastime and for my own use. I sell some right in the frame and give away much more but surely I would wish to have it free from larvae and webs. What if anything can be done to stop this moth from entering the hive and depositing eggs?

There is hardly a comb that I take up that does not contain a lot of web and one larva. I knew about this but I thought it got in stored frames of long standing. It is late now and I do not want to open the hives and work the combs. Can I do anything to insure that these larvae won't kill my colonies? Can I do anything next season (providing that I have any survive) to prevent the moth from getting in?

Answer:

You will probably have your bees next spring. I do not think the wax moth will do your colonies any harm.

The wax moth lays eggs in the cracks of the super and even in the hive, but they only develop and do damage under optimum conditions which include temperatures. Unless the colony is weak, the bees will usually destroy the larvae if they emerge inside the hive or colony.

To control the wax moth in the supers you have removed, I would suggest you fumigate the supers with carbon disulfide or sulfur fumes. The treatment should be repeated in 10 days if the weather stays warm and there is any evidence of the worm. Two treatments are usually sufficient.

The treatment is often done by making an airtight stack and placing the carbon disulfide in a shallow dish on top of the stack with an empty super around the dish. The stack is covered. The treatment must be done out of doors and away from any sparks or open flames, since the chemical will explode.

• *Question from—*
Manuel Gutierrez R,
Coatepec, Ver.
Mexico

I am a reader of your beginner's section and I ought to tell you that I have found it very interesting, besides your advices have helped me very much.

Now, I want you to advise me how to solve a problem I have in my honey canned in tin cans. I have stored this honey in five gallon tin cans with 3 inch screw caps, and the trouble is that some of these cans have already fermented. The honey was extracted from—citrus and wild flowers. I checked the water content of the honey and it was less than 15 per cent.

Answer:

I do not understand why honey which contains only 15% moisture should ferment. We feel safe under most conditions if our honey contains less to 18.5% moisture.

Honey which granulates will ferment more quickly than in the liquid form. *The Hive and the Honeybee* describes it this way: "When dextrose crystals form, water is incorporated in the proportion of 10 parts dextrose to 1 part water, which amounts to 9.09% of the material removed from the original liquid. The disproportionate removal of solids and water by granulation leaves an increased water content which may be sufficient to allow the growth of yeast and result in fermentation."

Heating to 145° F. will prevent fermentation since yeast is killed below this temperature.

Honey should also be stored in a dry place so it does not absorb additional water.

Since temperature is a factor, fermentation can be prevented by storing it at about 50° F. This is not very practical.

Honey which has fermented may be made usable again by heating it in an open container to 145°-160° F. This honey will foam considerably during the heating process but, if fermentation has not gone too far, the honey may be made more or less palatable.

•*Question from—*

C. H. Smith
Fort Worth, Texas

Are the queens I order mated? I have Caucasians and Italians and I am using Midnite queens in the Caucasian colonies and some Midnite queens in the Italian colonies to effect a change over. The queens were put in in August and September.

Answer:

Yes, the queens you buy are supposed to be mated. You would gain very little by introducing unmated queens, especially in the case of hybrids. The value of hybrids is the result of the controlled mating of the queen with a drone of known breeding.

The Federation

Secretary Joseph O. Moffett
115 So. College Ave., Fort Collins, Colorado

Federation Activities

The convention and the aftermath of the decisions taken there is still the big news. Some of these decisions will be mentioned briefly below.

Group life insurance plan adopted. A group life insurance plan was adopted. Under this plan each Federation member can take out $5,000 in life insurance. Each employee of a Federation member can be insured for $2,000. The rate is $1.10 per month per thousand. Benefits and premiums reduced by ½ at age 65.

This will be effective as soon as 100 sign for it. Non-Federation members can obtain this insurance by joining the Federation. The Ohio National Life Insurance is the sponsoring company. This offers insurance at a real saving, and we hope everyone carefully considers the advantages of this type of insurance. Write to your Federation office, 115 South College, Fort Collins, Colorado if you want to receive this insurance.

Liability group plan accepted. The 1960 Board of Directors accepted in principal the liability plan offered by the Manufacturers & Wholesalers Indemnity Exchange. Details of this plan are being worked out. Members will be eligible to purchase it in the near future. Details of this plan will be published shortly.

Monica McNutt is 1960 queen. Tennessee's honey queen, Monica McNutt, was chosen as the 1960 National Honey Queen. The queen program was televised and considerable publicity was obtained through it. A big effort will be made to again obtain much publicity for honey through the charming honey queen.

Past programs retained. The honey booth at the American Home Economists Convention, the National Honey Show, the annual convention, and the newsletter will be continued. The first two have proved valuable in promoting honey. A convention is virtually a necessity for an industry.

Check-off raised to 2 cents. The check-off plan was raised so that 2 cents will be withheld from both the producer and the packer per 60-pound can of honey or its equivalent. This will be effective April 1, 1960. This money is used to promote honey. It is spent by the Honey Industry Council of America. More packers participated in the plan than ever before last year, and it is hoped that everyone will in 1960.

Members needed to operate. The Federation needs your support if we are going to be active. Send in your 1960 dues today. Minimum dues are $3.00 with a suggested rate of 4 cents per colony for those having more than 75 colonies. Join with your fellow beekeepers today to help advance your industry.

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Meetings and Events

Northeast District, Wisconsin
March 29th, Oshkosh

The Northeast District of the Wisconsin Association will have its spring meeting on March 29th at Oshkosh Courthouse in the County Agent's room at 10 a.m. Cornelius C. Meyer is district chairman in charge. All beekeepers in this district are requested to attend. A very interesting program is planned.
Wm. M. Jacobson
Secretary

New Nevada Association Meeting
Fallon, March 28th

The beekeepers of Nevada have finally formed a State Association. We have three organization meetings and we have adopted a constitution and by-laws. The Board of Directors are Ralph Hall, Yerington; Paul McCart, Fernley; and Charles Wiley, Reno. Officers for 1960—President Elliot Lima; Vice President Perry McCart; Secretary-Treasurer Earl Nygren.

The next meeting will be March 27th at 1:00 p.m. in the Agricultural Building of the Fallon High School, Fallon.

Northeastern Kansas
March 6th, April 3rd, and May 1st.
Kansas City, Kansas

The regular monthly meeting of the Northeastern Kansas Association will be on Sunday, March 6th, April 3rd; and May 1st, at 2:30 p.m. in the Wyandotte County Court House, 7th and Ann Streets, Kansas City, Kansas, rear entrance. Carl Kalthoff of Lexington, Mo., will speak at our March meeting. May will be the date for the election of officers.
R. E. Ferguson
Secretary

Middlesex County (Mass.)
Waltham, March 26th

The March meeting of the Middlesex County Association will be held at 6:30 on Saturday, March 26 at the Waltham Field Station.

The fifth of the series of six lectures of the Beginners Course in Beekeeping will be presented by John Furber whose subject will be "Swarm Control — why necessary — various methods — discussion of queen excluder — division" and by Bill Maxant (orchardist) on "Pollination — discussion of the function of pollination — how to rent — value of pollination economically — discussion of self-fertility — self-infertility — cross pollination.

With eighty present at the January meeting it was pointed out by Henry Neunzer in his illustrated lecture that terramycin seems to be more efficient in curing American foulbrood than sulfathiazole. Al Baptist brought out the importance of feeding bees in the spring using sulfathiazole as a preventive.

The week of March 13th through March 20th, opening at 1 o'clock on Sundays and on weekdays from 10 to 10, the association will display two glass observation hives and will show an old fashioned straw skep and a modern Langstroth hive at the Massachusetts Horticultural Society flower show which is taking place this year at Wonderland Park for the first time, in Revere where 150,000 are expected to attend from all over New England. The booth is on the second floor of the grandstand building and members of the bee association will answer questions and distribute literature to interested visitors relative to bees and beekeeping.
M. Southwick
Corres. Sec.

Florida State
Miami, in October

The first Miami gathering of the 34-year old Florida State Association is set for next October, Felix H. Uzzell, association president and Sebring producer, announced here recently.

Fred L. Steely of Homestead, vice president of FSBA and chairman of the committee for the Miami convention, said over 200 delegates and guests from throughout the country are expected to attend the 1960 meeting.
Miami-Metro News Bureau

Omaha Host for 1961 Federation Convention

The Nebraska Beekeepers Association will host your 18th annual convention. The Paxton Hotel in Omaha will be convention headquarters. Main convention dates will be February 1-3.

North Carolina Spring Meeting
Greensboro—March 16

The North Carolina State Association will hold their annual Spring Meeting on March 16 at the Guilford County Agricultural Center, located on the north side of Hi-Way 70-A in the eastern edge of Greensboro between the Guilford County Home and Clark's department store.

There is plenty of parking space and lunch will be served on the premises at reasonable prices.

A tour will be arranged for the ladies not interested in honey bees after lunch and the men and lady beekeepers will visit a local apiary later in the afternoon if weather permits.

Come and bring your family and all your beekeeping friends and help us learn something about the latest methods of keeping honey bees the way they should be kept.
S.C.Squires,Sec.

Southeastern Minnesota,
Zumbrota, April 9th

The South Eastern Minn. Ass'n, meeting will be held in the R.E.A. Community room at Zumbrota on Sat., April 9th. Those attending the meeting are asked to bring a labor or time saving idea to the meeting. We have a very fine program. Entertainment; and lunch will be served.
Lyle Dankers
Secretary

Bee Research Meeting at Phoenix
(excerpts from a report by M. D. Levin, Utah)

1. Tree crop pollination, explained by Charles Reed of Bakersfield, Calif., demonstrated usefulness of "entrance inserts" in cross-pollination of apple, plum and other tree fruits. Must have proper timing; colonies at not over 200 foot intervals.

2. S.E.McGregor at Tucson is almost the only one working on cotton pollination. Cotton honey only about 25% of what it used to be while cotton per acre production has tripled. Big possibilities in hybrid cotton production which if developed would require a half million colonies to proper cross pollinate.

3. Bohart (Utah) showed value of bees for vegetable production, not only for better seed but better edible

portions of such vegetables and fruits. It might be necessary to go back to original sources and cross pollinate from there to get maximum possibilities of hybridization.

4. Todd (Tucson) Bees are a tool in large scale production of melons and fruits in irrigated areas. Reported one-third of income of California beekeepers in 1959 came from fees for pollination. Interesting report of studies on proper location of bees in relation to plantings, and effective deterrents against losses from insecticides.

5. L.D.Anderson (Calif. Citrus Exp. Sta.) Making field testings of effects of chemcials. Possibility of finding repellents to add to dangerous insecticides not yet solved. We need judicious use of such insecticides as are necessary with recommended procedures.

Session to be continued at Federation meeting in Omaha in early 1960.

Jottings From the Federation Meeting

By L. R. Stewart (Indiana)

APIARY INSPECTORS largely against indiscriminate use of sulfa which has in some instances resulted in more rigidity in inspection laws because of abuses. Fumidil B only 50% effective unless there is a follow-up at the package receiving end with additional treatment. Rejoiced that acarine found in California was immediately ferreted out and destroyed and that it was an external mite and not the tracheal mite causing such difficulties in Europe. Officers for 1960—S.E. Bailey, Ohio, Pres.; Homer Foote, Calif., Vice Pres.; Lloyd Graham, Mont., Sec.-Treas. Directors —E.A. Cancianne of Louisiana and Gilbert Perigo of Indiana.

Group Life Insurance through Federation. With a hundred members rate would be $1.10 per thousand up to $5000 maximum; only half that amount for oldsters. (Better check with Federation Secretary on particulars.Ed.)

ROYAL JELLY. Dr. Bernard Smith reported on his researches with royal jelly. It appears that royal jelly accelerates the healing of burns. It may be beneficial in certain types of cancer. Mice fed leukemia germs died quickly. Those fed leukemia germs plus royal jelly survived. It is thought that the hydrodecenoic acid in the jelly holds this key power. Dr. Smith is to continue his researches at Ontario Agricultural College at Guelph.

PHOENIX WEATHER. We liked Phoenix with its clean wide streets and its pretty buildings. But we will have to accept the old timer's word for its warmth and sunshine. (You didn't stay long enough, Lee. We were there ten days following the meeting and got sunburned watching swimmers in the outdoor pools. M.G.)

RESEARCH was the theme for the meeting. Natural pollen better than the best mixture. We need repellents in insecticides. Aluminum the best paint for hives. Insemination is the only positive method of pure mating. Drones go long distances to mate and so do queens. We should develop a variety of breeds, some for early crops, some for pollination, and some for longevity, pure honey production and so on.

If we have no business ability, all the research in the world will do us no good. How true.

Executive Committee for the Federation Harry Rodenberg of Montana, Leslie Little of Tennessee, Bob Banker of Minnesota, Hood Littlefield of California, G.C.Walker of Texas and S.J.Watkins of Colorado.

Frank Viguerie

Frank Viguerie, our friend and Starline breeder, Convent., La., passed away in the hospital at Lutcher, La., Jan. 31st after a long illness. Frank received a degree in chemistry from the New Mexico Military Academy. Then he was employed by the Humble Oil Co. in Baytown, Texas, for a number of years until his health failed. Thereafter he went into the bee business and operated under the name of Sunkist Apiaries. Frank had a host of friends.

(From E. L. Garon, Donaldsonville, La.)

Lew Pittam

Death of Lew Pittam, a former prominent beekeeper of southern California, occurred Jan. 12, from a heart attack. Lew was engaged in honey production in Riverside County during the early 1920's and up to the middle 1940's. Due to physical injuries acquired in the First World War in 1918-1919 when he served more than two years in the U.S. forces in France, his inability to carry on caused him to quit the bee business in 1948. During all the years I have known him he suffered from the afflictions of his war service, and during the past few years has spent much time each year at Federal Hospitals. He would have been 65 years old, Jan. 24.

Carl Wurth
Riverside,Cal.

Valentine Dadant

We regret to announce to our readers the death after a short illness of Miss Valentine Dadant at 82 years of age.

At the time the American Bee Journal was taken over by the Dadants in May 1912 Miss Valentine became its secretary, bookkeeper, and proof reader which position she occupied until she was needed by her aging parents, the C. P. Dadants, in the operation of their household. Second oldest of the C. P. Dadant children, her death is the first in the brother and sister group.

Her activities were unheralded and unbounding. She helped promote the Hamilton Library and was a member of its board for 52 years. Similarly her work in war Red Cross, child welfare, and scout work, as well as her aid to all civic and charitable enterprises earned for her a name as a quiet, tireless, philanthropic person, without desire for any self praise.

She belonged to P.E.O. and several community groups by whom she will be missed as well as by her family and the community. The employees of Dadant & Sons and the American Bee Journal will miss her constant and quiet attention to their interests. Somehow, her kind of solicitude for other people totals up to a greater measure of worth than the more spectacular efforts brought so vividly to our attention. People like Valentine are those who make life worth while as they live faithful to the intentions of their creator.

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Leahy's

- Better Quality
- Low Prices
- Prompt Shipment

Let Us Quote You Our Prices

Leahy Manufacturing Co.
Box B269
Higginsville, Missouri

Italian Package Bees & Queens

	1 - 24	25 or more
2 lb. pkg. bees with queen	$4.10	$3.75
3 lb. pkg. bees with queen	5.00	4.75

Package bees F.O.B. RIO OSO, CALIF.

	1 - 5	6 - 24	25 & up
Extra Queens in April	$1.60	$1.35	$1.25
May and June Queens	1.50	1.25	1.00

QUEENS POSTPAID — AIRMAIL IF IT WILL SPEED DELIVERY

10% books your order
Balance 10 days before delivery

Truck Orders A Specialty — Write For Details

John S. Shackelford
Rio Oso, Calif.
Phone
Wheatland, Calif.
NEptune 3-2392

THIS ADVERTISEMENT IS FROM ABJ, NOV. 1923

BEES FOR 1924

Our bees are not pedigreed, and each queen is not named, and I do not promise a tongue long enough to get to the bottom of a well, or an extra pound of bees.
But if you will buy 10 3-frame nuclei from me I will refund the price if they do not make as much honey as any 3-frame shipped at the same date and given the same hive combs and treatment in the same yard. Shipment from April 15 to June 1. Write for prices.

J. G. PUETT & SON, MOULTRIE, GA.
Reference: First National Bank, Moultrie, Ga.

The 1960 Ad Below Is From The Third Generation of Puetts

Our founder, J. G. Puett, might be shocked to find his grandson claiming a pedigree for queens. Times have changed. Believing that correct mating can only be controlled by specializing in one single variety of bees and queens, we have for several years produced only

STARLINE HYBRID QUEENS

Breeding is done only from artificially inseminated queens. Over 400 colonies headed by the proper drone mothers surround our mating area for a distance of eight miles in all directions, insuring the purest possible mating. Only the best queen-rearing conditions will produce quality queens.

PACKAGES	1 - 24	25 - 99	100 - up
2 lb.	$4.75	$4.50	$4.25
3 lb.	5.95	5.70	5.45
4 lb.	7.15	6.90	6.65

DADANT'S STARLINE HYBRID QUEENS

1 - 24	$1.75
25 - 99	1.65
100 - up	1.55

Add 10c per queen if you wish the queens marked and/or clipped

The Puett Company

Hahira, Georgia
"Where Satisfaction Is a Certainty"
SHIPPERS SINCE 1919

The Time is drawing near:

Have you made your decision regarding the number and time you want

PACKAGE BEES

Place that order now. Usually we can start shipping March 20th.

	1 - 24	25 - 99	100 up
2 lb. bees/regular queen	$4.50	$4.25	$4.00 ea.
3 lb. bees/regular queen	5.70	5.45	5.20 ea.

For Island Hybrid add 30c ea. to above.

Queens clipped unless otherwise ordered

Marking queens 10c each extra

"They Produce"

ROSSMAN APIARIES

P. O. Box 133 **Moultrie, Ga.**
Phone YUkon 5-6660

BEES

INSURE

BETTER

INCOME

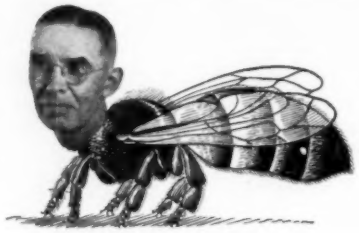
When you produce COMB HONEY in SECTIONS. The most profitable way for beekeepers.
Write for our free catalog and be convinced.

MARSHFIELD MFG. CO.

MARSHFIELD **WISCONSIN**

Wholesale — ***Retail***

BEES
QUEENS



Three-banded Italian bees and KELLEY'S ISLAND 3-banded Italian queens direct from our own Bee farm. Shipments start April 1st — express or parcel post shipment. Thousands of extra queens.

	Queens	2 lb. w/q	3 lb. w/q
1 - 24	$1.25	$4.25	$5.25
24 - 99	1.20	4.00	5.00
100 and up	1.15	3.75	4.75

WALTER T. KELLEY CO. **Clarkson, Ky.**

"Bee Wise — Woodmanise Your Bee Supplies"

A. G. Woodman Co. **Grand Rapids 4, Mich.**

(Send for catalog—350 Listings)

Package Bees ''ITALIANS'' Queens

Never before have good packages and queens been so important.
Serving those who demand the best.

— PRICES —

	1 - 9	10 - 49	50 up
2 lb. pkg. with young laying queen	$4.50	$4.25	$4.00
3 lb. pkg. with young laying queen	5.50	5.25	5.00
4 lb. pkg. with young laying queen	6.50	6.25	6.00
Extra Queens	1.50	1.40	1.30

Shipments by Express, Parcel Post or your Truck

Quality Does Not Cost — It Pays

The Wilbanks Apiaries **Claxton, Georgia**

A PUFF'S ENOUGH — FOR BUSY BEEKEEPERS

The Push-Button Bee Smoker

Join the swarms of happy users — thousands of them who save precious time and money with their HIVE-BOMBS. No heat; no sparks, no fire hazard — not from HIVE-BOMBS. You've got fingertip convenience when you hold a HIVE-BOMB; no fussing with fuel and matches. And a HIVE-BOMB's life is amazingly long — the perfect standby tool for busy beekeepers.

$1.29 plus freight at better dealers everywhere and in their catalogs

*® **STEWART TAYLOR, Camargo, Illinois**

Package Bees and Queens

E. J. Bordelon Apiaries
Moreauville, La. Box 33
Phone 2583

Service *Quality*
PACKAGE BEES QUEENS
ITALIANS
Write For Price
Joe Pencin
Skyline 3-5148 Box 517 Davis, Calif.

Hollopeter's Italian Queens
Hardy, Northern-bred Stock
WHITE PINE BEE FARMS
Box 800 Rockton, Pa.

American Rabbit Journal
Shows the Way to Success
The leading Rabbit Farming Magazine. Explains the growing meat rabbit industry. Non-fancy. Est. 1931. 3 years $2.00; 1 year $1.00; Sample dime.
American Rabbit Journal
Dept. S. Warrenton, Missouri

Yellow Italian Bees and Queens
Heavy producing stock, so gentle to work with. You will be amazed.
Prices
2 lbs. w/q—$3.50 3 lbs. w/q—$4.50
Young laying queens each $1.00
Shipping starts April 10th. Your orders will be appreciated. We guarantee Health Certificate and Live Arrival.
OSCAR ARNOUVILLE
Box 203 Hamburg, Louisiana

SELECTED ITALIAN
Packages Bees and Queens
Write For Prices
GENE W. STILES
501 W. 8th St. Davis, Calif.

NUCLEI MADE TO ORDER
4 Frames with plenty of bees and young queen $5.00 in your equipment.
Packages and Caucasian Queens
DELMAR L. SMITH
1954 Scenic Avenue, Central Point, Ore.
A Lifetime Among the Bees

Italian Bees and Queens
3 lb. package with queen $4.20
4 lb. package with queen $5.10
Extra Queen $1.15
Health Certificate
Safe Arrival Guaranteed
CLOVER BEE FARMS
HESSMER LOUISIANA

GOLDEN ITALIAN
QUEENS
Health Certificate and Live Delivery Guaranteed.
1-10 Air Mail—$1.25; 10-99 Air Mail—$1.10; 100 up Air Mail $1.00
HIGNITE BEE FARMS
230 S. Lynchburg Rd. Baytown, Texas

PLANT'S BEES
Year after year dependability, quality service.

	1 to 9	10 to 50	51-up
2-lb. pkg. with queen	$4.50	$4.25	$4.00
3-lb. pkg. with queen	5.70	5.45	5.20
Queens	1.45	1.35	1.25

Larger packages at $1.20 per each additional pound.
Our Package and Queen Yards are Fumidil fed
No charge to clip, mark, airmail queens.
W. E. PLANT Hattiesburg, Miss.

Quality in Packages Bees and Queens
Caucasian or Italian; gentle, highly productive.
Health certificate; live arrival guaranteed.

Lots of	Queens	2 lb. w/q	3 lb. w/q	4 lb. w/q	5 lb. w/q
1 - 25	$1.50	$4.25	$5.35	$6.45	$7.55
26 - 99	1.35	4.00	5.05	6.10	7.15
100 up	1.20	3.75	4.75	5.75	6.75

FARRIS HOMAN Shannon, Miss.

ITALIAN OR CAUCASIAN
SELECT QUEENS
PRICE $1.00 EACH — Bred for production and gentleness
SIERRA NEVADA APIARIES
12491 LACEY BLVD. HANFORD, CALIF.

Quality Queens For 60
A Strain That Has Gained World Wide Approval For Almost ½ Century.
PRICE $1.00 EACH
10% DISCOUNT ON LOTS OF 100 UP.
Begin Shipping March 20th
Shipments Outside U.S.A. & Canada - Add 15%
O. K. ANDERSON & SON
Box 193 COFFEE SPRINGS, ALABAMA U.S.A.

Renew Your Subscription Now!

QUEENS — — — ITALIAN
Under 10 ... $1.10 10 or over ... $1.00
Clipped or Marked 10c Each
SOUTHLAND APIARIES Ball, Louisiana

PACKAGE BEES
QUEENS

ITALIANS — CAUCASIANS

When you buy bees from Stover, you get the results of our long experience in producing better package bees and queens. Several of our employees have been with us for over thirty years, and many of our customers even longer. This speaks for itself.

May we have your order? No deposit to book but we ask that payment be made 10 days prior to shipping date so we can line your order up properly.

Three branches to serve you better.

— PRICES TO MAY 20TH. —

In lots of	Queens	2 lb. & Q.	3 lb. & Q.	4 lb. & Q.	5 lb. & Q.
1 - 24	$1.50	$4.50	$5.65	$6.75	$7.95
25 - 99	1.40	4.25	5.35	6.45	7.55
100 - 499	1.30	4.00	5.05	6.10	7.15

Tested Queens $2.50 each

Queens Postpaid - Airmailed - Clipped - No Extra Cost

10c each extra for marking

THE STOVER APIARIES

Mayhew **Mississippi**

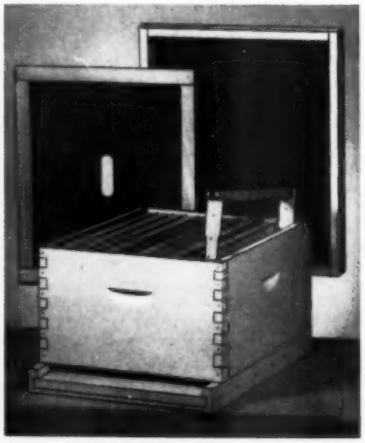
We Invite you to Try the Best

Dadant's Standard 10 Fr. Hives

All Exposed Parts Completely Rotproofed.

Wedge Topbar Frames Slotted Bottom Bars

Tempered Masonite Cover Liners for Added Strength



V-Shaped Frame Rests

Lev-L-Drain Bottoms

Tempered Masonite Inner Covers

Get Up-to-Date Dadant Hives for Maximum Utility and Long Life

Available at your nearest Dadant Dealer or any of our 6 conveniently located warehouses.

DADANT & SONS, INC.

Hamilton **Illinois**

Superior California Italian

Package Bees and Queens

	2 lb. w/q	3 lb. w/q
1 - 24	$4.10	$5.10
25 - 49	3.85	4.85
50 & up	3.75	4.75

FOB Woodland

Queens ..... $1.25 to May 5

DUMARS, HARLAN & PHELAN

12 Sutter St. Woodland, Calif.

HONEY WANTED *large & small lots.*
All Grades - Top Prices.
HONEY SALES COMPANY
2817 No. 2nd St. Minneapolis 11, Minn.

CANADIAN BEE JOURNAL

Canadian beekeepers have much in common with their neighbors in the U.S. If you are interested in bee activities "North of the Border," send us your subscription NOW. Subscription price, $1.75 per year in U.S.A.

Canadian Bee Journal

Streetsville, Ontario, Canada

Northern California

BEES and QUEENS

Spring queens until May 5

	Italian	Starline
1 - 10	$1.50	$1.80
10 - 25	1.35	1.65
25 or more	1.20	1.50
After May 5		
Less than 25	1.10	1.40
25 or more	1.00	1.30

Place your order with us and be assured of top quality queens and prompt, courteous service.

Geo. E. Smith & Son

Rt. 4, Box 59 Yuba City, Calif.
Phone SHerwood 2-3511

FREE...

A Sample Copy

"Gleanings in Bee Culture"

Look it Over — You Will Like It

A. I. ROOT CO., Medina, Ohio

L. C. ANTLES
Fruit Tree Pollen Supplies Co.
FRUIT POLLENS *and*
POLLEN GOLD
for human food
P. O. Box 1243
Wenatchee, Washington

Bees and Queens

Send for FREE Circulars

Booking orders now.

Over 30 years a shipper.

BLUE BONNET APIARIES

Weslaco, Texas

JENSEN'S

Package Bees and Queens

	Packages with Dadant "Starline" Hybrid Queens:			Packages with Jensen's "Magnolia State" Italian Queens:		
	1 - 24	25 - 99	100 - up	1 - 24	25 - 99	100 - up
2 Lb.	$4.80	$4.55	$4.30	$4.50	$4.25	$4.00
3 Lb.	5.90	5.65	5.40	5.60	5.35	5.10
4 Lb.	7.00	6.75	6.50	6.70	6.45	6.20
	Starline		—QUEENS—		Magnolia	
	$1.75	$1.65	$1.55	$1.45	$1.35	$1.25

Clipped and Marked Free. *Air Mail Postage Paid.*

Macon, Mississippi Phone 170J

Quality Queens and Package Bees

QUEENS

1 to 24 ..... $1.25 each 25 up ..... $1.00 each

PACKAGES

2 lb. pkg. Bees with Queen ..... $4.50 each
3 lb. pkg. Bees with Queen ..... $5.50 each
25 up - Deduct 25c per pkg.

Royal Jelly - $8.00 per oz. Discount on 1 lb. or more.

B. A. ANDERSON Opp, Ala. Phone Hyatt 3-7584

Early Packages and Queens for 1960

REMEMBER WE ARE PREPARED TO SHIP PACKAGES AND QUEENS
EARLY IN 1960

Cutts Heavy Producing Queens, Regular Italians and Starlines

J. M. CUTTS AND SONS Box 336 Chipley, Fla.

Better Bred Queens

THREE BANDED ITALIANS

The same reliable service. Better Bred Bees and Queens. Fumidil B fed. Same shipping facilities will be yours when ordering from us. Help yourself and us by booking now.

	Queens	2 lb. w/q	3 lb. w/q
1 to 24	$1.40	$4.25	$5.35
25 to 100	1.15	3.75	4.75

Phone Valley 9-6183 after 7 P.M.

CALVERT APIARIES Calvert, Alabama

STARLINE 4-WAY HYBRID QUEENS
BRED IN ISOLATED YARDS

Reg. U. S. Pat. Off.

Circular Free	1 - 24	25 - 99	100 up
Starline Queens	$1.75	$1.65	$1.55
Italian Queens	1.45	1.35	1.25

READY APRIL 15TH

JOHN G. MILLER 723 6th St., Corpus Christi, Texas

—The Market Place—

CLASSIFIED ADVERTISING—Net price 16 cents per word per insertion. Initials, letters or combination of letters as in street address, counted as individual words. No advertisement accepted for less than ten words. Payable cash in advance. Keyed Classified, 25 cents additional.

BEES AND QUEENS

ITALIANS—PACKAGES, Queens. Martz, Rt. A2 Box 846, Vacaville, California.

CARNIOLAN CAUCASIAN bees and queens. 2 lb. pack $4.00, 3 lb. pack $5.00. Untested queens $1.00 any number. Tillery Bros., Rt. 3, Box 85, Greenville, Ala.

BRIGHT ITALIANS: 3 lb. with queen $5.00, 2 lb. with queen $4.50, f.o.b. Aberdeen, queens $1.50. Sheppard Apiaries, Aberdeen, North Carolina.

QUALITY ITALIAN queen bees—Until June 1st, each $1.25, 5 or more $1.20 each, 25 or more $1.15 each. Write for package bee prices. A. G. Woodman Co., Grand Rapids, Michigan or Lena, S. C.

PACKAGE BEES for sale: 2 lb. $4.75, 3 lb. $5.75. Delivered in Pardeeville, Wis., one day from Mississippi. Write for shipping date. Will allow 25 cents on usable cages. Ramsey's Jewelry.

CARNIOLAN OR CAUCASIAN bees and queens. 2 lb. pkg. $4.00, 3 lb. pkg. $5.00. Queens $1.00. Roy Waddell, Rt. 3, Woodruff, South Carolina.

200 NUCLEUS HIVES, four or five frame nucs, available April 15th. Robert Gough, Route 5, Box 196, Eugene, Oregon.

BOOSTER BEES—70 cents pound in your cages after May fifteenth. Can supply new cages and queens. A. V. Dowling, North St., Valdosta, Georgia.

THE GOLDEN APIARIES Italian bees 3 lbs. with untested queens $4.25 each, 4 lbs. with untested queens $5.25. Queenless packages, deduct 80c per package. Live delivery and a health certificate with shipment. Maurice Roy, Hessmer, La.

3-BAND ITALIAN and Carniolan bees 3 lbs. $5.00, 5 lbs. $6.90. Queens $1.30. Luther Pickett, Efland, North Carolina.

DADANT STARLINE hybrids. Quality queens and package bees. Queens $1.70 each airmailed. Two pounds bees with queen $4.95, shipping weight 6 lbs, three lbs. and queen $5.70, weight 7 lbs. Add postage if by mail, express collect. For Italian queens deduct 45c per queen. Quantity prices on request. Book early without deposit. Shipments begin April 1st. Full weight live bees at destination, personal service, health certificate. Queen clipped and marked, if desired, 10 cents each. S. J. Head, Crossett, Ark. WHERE YOUR BUSINESS IS APPRECIATED.

PACKAGE BEES, QUEENS, Best Quality and service. Write for prices. Hubbard Apiaries, Onsted, Michigan.

IF YOU WANT some good productive bees try our Starline queens and packaged bees. WICHT APIARIES, 406 Miller St., Hattiesburg, Mississippi.

DARK ITALIANS BRED for production. 3 lb. package bees with queens $4.75, extra $1.25. Henry Loehr, Caldwell, Texas.

CAUCASIAN QUEENS $1.25 each. Leo Kretzschmar, 701 East State St., Eagle Lake, Texas.

JOE'S HIGH Quality Italian bees and queens. 3 lbs. with queen $4.50, 4 lbs. with queen $5.25; queenless packages deduct $1.10 per package. Live delivery, health certificate and full weight packages guaranteed. Joe Roy Apiaries, Hessmer, La.

Copy for the department must reach us not later than the tenth of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

Rate of Classified advertising — 16 cents for each word, letter, figure or initial, including the name and address. Minimum ad, ten words.

As a measure of precaution to our readers we require reference of all new advertisers. To save time, please send the name of your bank and other references with your copy.

Advertisers offering used equipment or bees on comb must guarantee them free from disease or certificate of inspection from authorized inspector. The conditions should be stated to insure that buyer is fully informed.

PACKAGE BEES and queens the best. V. W. Mentink and Sons, 615 J. St., Davis, California.

FOR SALE

FRAMES & SUPERS—Factory prices FRAMES 9-⅛ 1-100 12c, 100-1000 10c, 1000 or more 8c. SUPERS 9-⅜ depth 1-12 $1.35, 25-100 $1.25, 100-1000 $1.15. Write for free catalog. KEHM BROTHERS APIARIES, Box 346, Rt. No. 1, Grand Island, Nebraska. Located 2 miles North of Drive-Inn-Theater.

FOR SALE: Domestic Pollen, Royal Jelly. Also Pollen Supplement Dry Mix (You add water and honey). Royal Jelly Enterprises, 1017 Los Carneros Avenue, Napa, California.

FREE CATALOG: Cypress Bee Hives and bee supplies. Save up to 40% on hives that last. Myers Craft Manufacturing Co., Burgaw, North Carolina.

SUPER STRENGTH 100 mg. Royal Jelly capsules in bottles of 100 for $10.00. Prairie View Honey Co. 12303 Twelfth St., Detroit 6, Michigan.

BEST WHITE GRANULATED SUGAR by the bag or truckload. Good stock at all times for Bee Feed. Hubbard Apiaries, Onsted, Michigan.

FOR SALE: 800 1-story 10-frame hives of bees $8.00 per colony, Midwest, discount truck lots, health certificate furnished. Box WBF, c/o American Bee Journal.

100 HIVES Bees, all equipment, inspection certificate. O. Secord, Marine City, Michigan.

APIARY FOR SALE: In San Luis Valley 40 acres leveled, irrigated land, well fenced. Large honey house, well equipped. 7 room modern house. Mrs. H. B. Norvell, Center, Colorado.

FOR SALE: Complete modern, up-to-date, fully equipped bee business. 700 colonies, 40 x 80 two-story honey house. Three bedroom modern home. J. D. Harrah, Charlo, Montana.

TO REDUCE operations will sell 1000 colonies. Also combs of brood and/or nucs. Will consider delivering in Middle West. D. L. Alexander, Rt. 1, Box 16, Holtville, California.

100 or more hives, supers heavy with honey in Delta County, Texas. Write Clyde Cobb, Belleville, Arkansas.

SUGAR—SAVE $ imported first quality refined white granulated sugar. Guaranteed. $7.75. Eugene McClain, 12491 Lacey, Hanford, California.

HONEY LABELS

Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.

C. W. AEPPLER COMPANY

Oconomowoc, Wisconsin

500 HIVES YOUNG bees and queens in single 10-frame hives. Can furnish permanent exclusive locations, 90 to 100 pounds extra white honey, health certificate. Box H. S. c/o American Bee Journal.

ROYAL JELLY THE FINEST PURE AND fresh during all winter. Pound $80.00, ½ lb. $45.00 airmailed. A. Vallotton, Rt. 1, Box 22, Holtsville, California.

300 to 500 SINGLE HIVES, young bees and queens ready for honeyflow. Spring delivery. You haul from Texas or can deliver load 500 on mileage basis. States Apiaries, Saratoga, Wyoming.

ARMY SURPLUS mosquito veils suitable for Bee Veils $1.25 each. Prepaid, Bero Bros., 607 McKinley Ave., Newark, Ohio.

APPLY BEESTROY in your locality. Charge for services. Block infiltration of wild bees and E.F.B. into your own stock. Dealer price $18.00 per dozen from Valley Apiaries, Rt. 2, Box 23, Prophetstown, Illinois, or Dadant & Sons, Hamilton, Illinois.

55 COLONIES, 2 story 10-fr. good combs also supers with combs at auction March 14, afternoon. No disease. Hubert Martin, Dryridge, Kentucky on U.S. 25, 35 miles south of Cincinnati.

FOR SALE: 275 3-story hives of bees. Good equipment and strong colonies. Price $12.00 each. Claud Evans, P.O. Box 612, Del Paso Heights, California.

HIVES, SUPERS, Extracting equipment for 70 to 100 colonies. Inspection certificate available. List furnished. First reasonable offer. W. P. Lundy, 10068 Sioux, Detroit 39, Michigan.

FOR SALE OR trade for queens: 1,000 package bee cages. Make offer. Griggs, Hancock, Iowa.

TWO HUNDRED colonies with pollination business. M. T. Traphagen, Hunter, New York.

FOR SALE: Don-Lo Loader, 20 foot boom, 12 volt fits 1950 Chevrolet truck, $250.00; includes generator, voltage regulator and battery. W. L. Wilmert, 7584 Elmwood Road, San Bernardino, California.

FOR SALE: 50 frame honey extractor good as new $150.00, motor $25.00, 100 gallon honey tank with gate $15.00, 25 gallon honey tank with gate $8.00, Hercules boiler, steam or hot water, 5 room size used 6 months $70.00, 50-60 lb. can corrugated shipping cartons 5c each. Numerous comb honey and extracting supers, hive bodies empty, lids and bottoms, some new, new frames bargain prices. Jacob Bender, Fairbury, Illinois.

450 to 500 colonies of bees. Plenty of equipment to run 600. Truck and extracting equipment. All for $7,000.00. Charles L. Green, Rt. 8, Fort Wayne, Indiana.

STANDARD SUPERS 9-⅝" $1.00, standard Hoffman frames 8c, covers bottom-two cleat, Redwood pine cleats 75c. Price list other items. Johanson's Bee Farm, 11360 Redwood Highway, Healdsburg, California.

FOR SALE: Honey Bottling Equipment: 1-16 sheet Cellulo filter complete with pump, motor, drip pan, stand, all in good condition, 1 electro-flow filler in A-1 working condition, 1 National "Liquid" Carbonic Corp. semi-automatic labeler complete with attachments for oval jars and round jars. Also miscellaneous parts, one Taco flash heater and mixing tank with agitator, five lengths of roller track with stands, one steam boiler with gas burner (8 gallon), honey liquefying tank with automatic gas burners with aquastat 36-60 lb. cans capacity, miscellaneous items such as filter paper, filter aid etc. This complete outfit for $2,000.00 cash f.o.b. Blair, Nebraska, Baxter Honey Farm.

FOR SALE: Two hundred ten frame colonies of bees. Complete hives or combs and bees. Harold Staley, Mankato, Minnesota.

50 HIVES OF bees for sale, lot of 10 frame equipment. Chas. Chilcote, Morrisdale, Pa.

FOR SALE: Two 45 frame Simplicity extractors. Johnson's Bee Farms, Callaway, Minnesota.

26 Colonies bees, all needed tools, extracting equipment, etc. $200.00. 4864 9th Ave., Sacramento, California.

100 2-story 10 frame colonies, $13.50 each cash. H. Peterman, 351 No. Windsor Ave., Stockton, California.

HONEY FOR SALE

WHITE CLOVER HONEY in sixties. Ralph Gamber, 910 State, Lancaster, Pa.

WE CAN SUPPLY NICE white honey. Immediate delivery. Russell Smalley, Beaver, Iowa.

CERTIFIED TUPELO HONEY five pound $2.50, delivered; 60 pound 25c pound f.o.b.; 55 gallon drum 24c f.o.b., sample 25c. Phillips Honey Co., P. O. Box 1506, Clearwater, Florida.

FOR SALE—TRUCK loads of light amber honey. Cans or drums. Processed or unprocessed. Weaver Apiaries, Navasota, Texas.

HONEY and BEESWAX WANTED

WANTED—extra white, white and light amber honey in 60 lb. cans. Cloverdale Honey Co., Fredonia, New York.

WANTED—Extra white and light amber honey. Let us ship you the containers. Sell us your honey for CASH on delivery. The Hubbard Apiaries, Manufacturers of Bee Supplies and Comb Foundation, Onsted, Mich.

HONEY AND Beeswax wanted. Melford Olson Honey Co., 5201 Douglas Drive, Minneapolis 22, Minnesota.

WRITE FOR SHIPPING TAGS and current quotations on rendered beeswax. Any amount from one pound up bought. If you have 25 pounds or more, save 25% by letting us work it into foundation for you. Walter T. Kelley Co., Clarkson, Ky.

ALL GRADES extracted honey in 60 lb. cans or 600 lb. drums. Prairie View Honey Co. 12303 12th St., Detroit 6, Michigan.

EXTRACTED HONEY wanted. Please contact Russell Smalley, Beaver, Iowa.

WANTED—WHITE and extra light amber honey 60 lb. cans or drums. Hubbard Apiaries, Onsted, Michigan.

CASH paid for honey in all grades. Send samples. Schultz Honey Farms, Ripon, Wisconsin.

SUPPLIES

WRITE FOR CATALOGUE. Quality bee supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies, Onsted, Mich.

THE BIGGEST BEE SUPPLY CATALOGUE PUBLISHED (64 pages) free for the asking. Big factory manufacturing a complete line of wooden goods, comb foundation, metal goods, veils and gloves, carloads in stock, daily shipments. WALTER T. KELLEY CO., CLARKSON, KY.

SUPPLIES of all kinds, Brand Melters, Power Extractors, both Radial and Basket types. Hodgson Bee Supplies Ltd., New Westminister, British Columbia.

IF YOU HAVE not received our ALL NEW 1960 Catalog describing new items at bargain prices, please request. 100% Pure Beeswax Foundations, Top-Quality Western-Pine Wooden Supplies. We manufacture our own Bee Comb Foundation and Wooden Bee Supplies. HUBBARD APIARIES, ONSTED, MICHIGAN.

POSITIONS and HELP WANTED

WANTED: EXPERIENCED beeman for permanent position. Migratory honey production and Pollination Service. Good truck driver, good habits and reference. VERNON THOMAS RANCH, P.O. Box 8, Huron, California.

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WANTED

WANTED TO BUY—Bees and equipment with location in Alabama or Mississippi. Write Box HP, c/o American Bee Journal.

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WANTED used 30-frame extractor. B. H. Cobb, Rt. 4, Box 57, Rayville, La.

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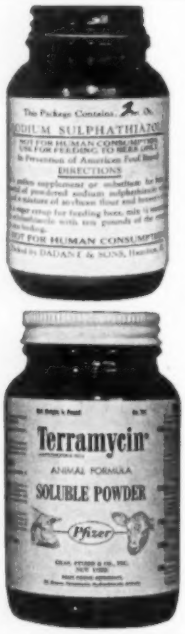

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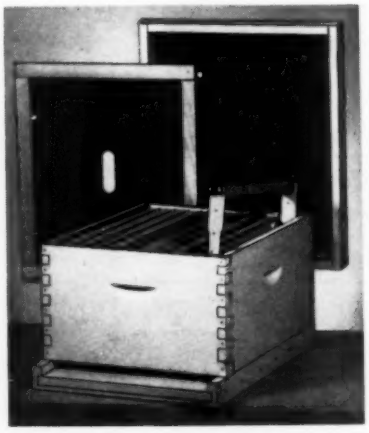

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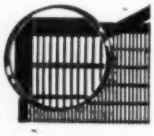

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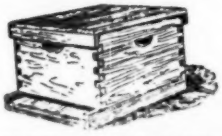

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Crop and Market

by M. G. Dadant

It is too early to have any idea of how bees are faring except that the weather has not been unusual and in most cases the colonies had sufficient stores to carry them through so that conditions appear to be satisfactory both from this standpoint and from the few flights which the bees have had, being enough to carry them along for another spell before another flight will be needed.

In the Southeast, owing to the great shortage of a fall crop, much feeding is going to have to be done and colonies for that reason in many cases are not up to normal conditions. However, it will be possible for them to reach their peak perhaps by the time the citrus fruits come into full bloom at about the time this magazine is being distributed. Some complaints are coming from Texas owing to the colonies being depleted by fall poison sprays, similarly in California.

Likewise, the shortage of the Arizona and California crops last year was bound to leave colonies in low average condition now so that it will be necessary for a build-up before a fair comparison can be made.

MOISTURE

Throughout all of the eastern sections of the United States and the South, we believe that without exception there has been ample moisture and in many cases much more than a year ago.

Strangely enough while heavy snows have occurred in the middle South, there has been perhaps a lack of snow in the northern border section although we can hardly report a shortage. Wyoming does report 75% of ordinary moisture for this time of year. Utah also, together with Oregon and Washington, has been complaining of moisture shortage but recent rains perhaps have relieved this.

There is no doubt but that California, Arizona and New Mexico have had more moisture than a year ago but still moisture conditions are not such as can guarantee that the desert will be blooming at the time that the bees are ready for it. This will depend upon more moisture keeping the plants in satisfactory condition.

There is no doubt, however, that the snows have been heavy throughout the intermountain territory and this bodes well for irrigated sections not only in the intermountain territory, but in the extreme Southwest.

When the meeting was being held in Phoenix in mid-January, reports were that most reservoirs were already filled on account of winter snows.

In the Canadian provinces, conditions seem to be about as usual with conditions in Manitoba and Saskatchewan improved as to moisture over a year ago.

All in all, conditions of bees seem to be satisfactory and moisture better than usual except in those sections indicated above.

HONEY ON HAND

Again we can report favorably that there is not going to be any great carry-over of honey this year. The intermountain territory usually is a "carry-over" spot but owing to a shortage of honey on the west coast this year intermountain lots were eagerly "grabbed up" and as a consequence, three is practically no honey left in the intermountain territory or for that matter anywhere else. The clean-up should be quite good with very little left even in the hands of the packers.

PRICES

There has been no big improvement in prices. Packers have been able to piece out with what they had bought originally without stimulating the market too greatly although in those sections where the market previously showed bad breaks, there has been a very decided improvement, namely in Wisconsin and Minnesota. In the Southeast, particularly Georgia and Florida, amber honey is still in not too great demand but no heavy carry-over is anticipated. Texas also has been slow to improve its prices on white honey above 12 cents, with amber in the neighborhood of 10. This is yet too low but better than had been anticipated earlier.

In the Canadian provinces, Toronto, Ontario report some four million pounds of honey still on hand for that province. Quebec is pretty well cleaned up as are all the provinces to the west. As a consequence of the rather heavy carry-over, Ontario prices range around 13 to 14 cents whereas they are better in the western provinces and in British Columbia.

The demand from Europe has been good but here competition exists not only with United States honey but with South American and Australian honey as well.

Albert G. Woodman

Just as we are closing our last forms for this March issue, on Feb. 23, we learn by telegram of the death of Albert G. Woodman on Feb. 22, which occurred in Daytona Beach, Florida, where he had been spending the winter. In his eighties, death came quickly.

A. G. Woodman

It is beyond us, in these few words, to tell our readers of our great appreciation for Bert Woodman both as a man and as a beekeeper. This was attested to at the Michigan Commemorative meeting for the Woodmans in 1955, the diamond (75th) anniversary of the Woodmans in beekeeping in Michigan. The business was started by L. C. Woodman, the father, continued by A. G. Woodman, the son, and A.B.C. (Baxter) Woodman, the grandson, now for several years the head of the business of producing for the beekeeper the best in honey extracting and other beekeeping equipment.

In our over fifty years of connection with the family, we have yet to hear the first word of criticism of the Woodmans. A.G. himself was always in the background at meetings but his influence was there to help promote anything which would aid the beekeepers of the State and Nation. We hope to have a more extended review in our next issue.

Besides the son, Baxter, two daughters survive and several grandchildren.

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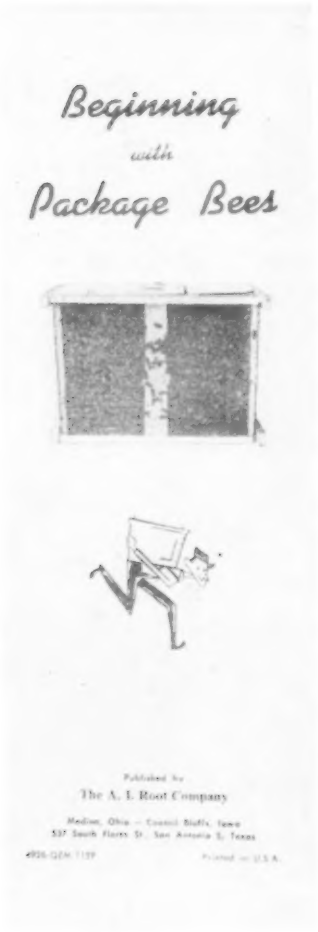

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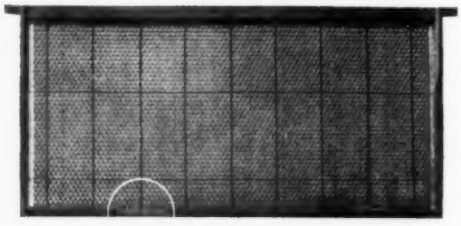

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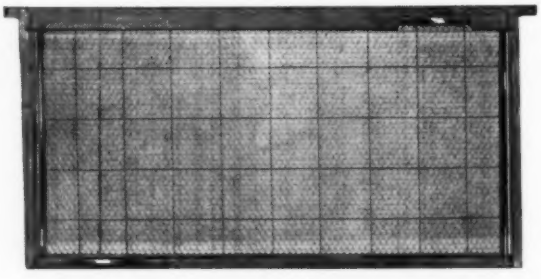

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